

# 1031 Generating Functions

*par*

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*found using GFUN and other tools with a sample of the Encyclopedia of Integer Sequences (as of 1992) with 4568 sequences.*

## Denumerants

**Réf.** R1 152.

**HIS2** A0008

Euler

erreur au 19<sup>e</sup> terme corrigée avec la

**HIS1** N0099

Fraction rationnelle

formule

1

$$\frac{1}{(1-z)(1-z^2)(1-z^5)(1-z^{10})}$$

1, 1, 2, 2, 3, 4, 5, 6, 7, 8, 11, 12, 15, 16, 19, 22, 25, 28, 34, 40

### Partitions n into distinct parts

Réf. AS1 836.

HIS2 A0009

Euler

HIS1 N0100

Produit infini

$$\prod_{n \geq 0} (1 - z^{2n+1})$$

1, 1, 1, 2, 2, 3, 4, 5, 6, 8, 10, 12, 15, 18, 22, 27, 32, 38, 46, 54, 64, 76, 89, 104, 122, 142, 165, 192, 222, 256, 296, 340, 390, 448, 512, 585, 668, 760, 864, 982, 1113, 1260, 1426

### Related to Latin Rectangles

Réf. R1 210.

HIS2 A0023

Recouvrements

Suite P-récurrente

HIS1 N0140 exponentielle (rationnelle)

$$a(n) = (3n - 1) a(n - 1) + (-4n + 2) a(n - 2)$$

1

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$$\exp(2z) (1 - z)$$

1, 1, 2, 2, 8, 8, 112, 656, 5504, 49024, 491264

## The natural numbers

Réf.

**HIS2** A0027      Approximants de Padé

**HIS1** N0173      Fraction rationnelle

$$\frac{1}{(1 - z)^2}$$

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49

## Partitions of n

Réf. RS4 90. R1 122. AS1 836.

**HIS2** A0041      Euler

**HIS1** N0244      Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)}$$

1, 1, 2, 3, 5, 7, 11, 15, 22, 30, 42, 56, 77, 101, 135, 176, 231, 297, 385, 490, 627, 792, 1002, 1255, 1575, 1958, 2436, 3010, 3718, 4565, 5604, 6842, 8349, 10143, 12310, 14883

### Dying Rabbits

Réf. FQ 2 108 64.

HIS2 A0044 Approximants de Padé

HIS1 N0255 Fraction rationnelle

$$a(n+13)=a(n+12)+a(n+11)+a(n)$$

$$\frac{1 + z^2 + z^4 + z^6 + z^8 + z^{10}}{1 - z^3 - z^5 - z^7 - z^9 - z^{11}}$$

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 232, 375, 606, 979, 1582, 2556, 4130, 6673, 10782, 17421, 28148, 45480, 73484, 118732, 191841, 309967, 500829, 809214, 1307487

### Fibonacci numbers

Réf. HW1 148. HO69.

HIS2 A0045 Approximants de Padé

HIS1 N0256 Fraction rationnelle

$$\frac{1}{1 - z - z^2}$$

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, 46368, 75025, 121393, 196418, 317811, 514229, 832040, 1346269

$$2^{n+1}$$

Réf. BA9.

**HIS2** A0051      Approximants de Padé

**HIS1** N0266      Fraction rationnelle

$$2 - 3z$$

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$$(1 - z)(1 - 2z)$$

2, 3, 5, 9, 17, 33, 65, 129, 257, 513, 1025, 2049, 4097, 8193, 16385, 32769,  
65537, 131073, 262145, 524289, 1048577, 2097153, 4194305, 8388609,  
16777217

### Denumerants

Réf. R1 152.

**HIS2** A0064      Euler      erreur au 19è terme corrigée avec la

**HIS1** N0375      Fraction rationnelle      formule

$$1$$

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$$(1 - z)^2 (1 - z)^2 (1 - z)^5 (1 - z)^{10}$$

1, 2, 4, 6, 9, 13, 18, 24, 31, 39, 50, 62, 77, 93, 112, 134, 159, 187, 252, 292

**n-node trees of height 2****Réf.** IBMJ 4 475 60. KU64.**HIS2** A0065 Euler**HIS1** N0379 Produit infini

$$\frac{z}{(1-z)} + \prod_{n \geq 1} \frac{1}{(1-z^n)}$$

1, 2, 4, 6, 10, 14, 21, 29, 41, 55, 76, 100, 134, 175, 230, 296, 384, 489, 626,  
791, 1001, 1254, 1574, 1957, 2435, 3009, 3717, 4564, 5603, 6841, 8348,  
10142, 12309

**Partitions of n into parts of 2 kinds****Réf.** RS4 90. RCI 199. FQ 9 332 71.**HIS2** A0070 Euler**HIS1** N0396 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1-z^n)^{c(n)}}$$

$$c(n) = 2, 1, 1, 1, 1, \dots$$

1, 2, 4, 7, 12, 19, 30, 45, 67, 97, 139, 195, 272, 373, 508, 684, 915, 1212,  
1597, 2087, 2714, 3506, 4508, 5763, 7338, 9296, 11732, 14742, 18460,  
23025, 28629, 35471

### Fibonacci numbers - 1

Réf. R1 155. AENS 79 203 62. FQ 3 295 65.

HIS2 A0071 Approximants de Padé

HIS1 N0397 Fraction rationnelle

$$\frac{1}{1 - 2z + z^3}$$

1, 2, 4, 7, 12, 20, 33, 54, 88, 143, 232, 376, 609, 986, 1596, 2583, 4180, 6764, 10945, 17710, 28656, 46367, 75024, 121392, 196417, 317810, 514228, 832039, 1346268

### Tribonacci numbers

Réf. FQ 1(3) 71 63; 5 211 67.

HIS2 A0073 Approximants de Padé

HIS1 N0406 Fraction rationnelle

$$\frac{z}{1 - z - z^2 - z^3}$$

0, 1, 1, 2, 4, 7, 13, 24, 44, 81, 149, 274, 504, 927, 1705, 3136, 5768, 10609, 19513, 35890, 66012, 121415, 223317, 410744, 755476, 1389537, 2555757, 4700770, 8646064

### Tetranacci numbers

Réf. AMM 33 232 26. FQ 1(3) 74 63.

HIS2 A0078 Approximants de Padé

HIS1 N0423 Fraction rationnelle

$$\frac{1}{1 - z - z^2 - z^3 - z^4}$$

1, 1, 2, 4, 8, 15, 29, 56, 108, 208, 401, 773, 1490, 2872, 5536, 10671, 20569, 39648, 76424, 147312, 283953, 547337, 1055026, 2033628, 3919944, 7555935, 14564533

### Powers of 2

Réf. BA9. MOC 23 456 69.

HIS2 A0079 Approximants de Padé

HIS1 N0432 Fraction rationnelle

$$\frac{1}{1 - 2z}$$

1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536, 131072, 262144, 524288, 1048576, 2097152, 4194304, 8388608, 16777216



### Rooted trees with n nodes

Réf. R1 138. HA69 232.

**HIS2** A0081 Recouplements

**HIS1** N0454 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

**c(n) = a(n) : la suite elle-même.**

1, 1, 2, 4, 9, 20, 48, 115, 286, 719, 1842, 4766, 12486, 32973, 87811, 235381, 634847, 1721159, 4688676, 12826228, 35221832, 97055181, 268282855, 743724984

Réf. LU91 1 221. R1 86. MU60 6. DMJ 35 659 68.

**HIS2** A0085 Dérivée logarithmique Suite P-récurrente

**HIS1** N0469 exponentielle

$a(n) = a(n - 1) + (n - 1) a(n - 2)$

$$\exp\left(z + \frac{1}{2} z^2\right)$$

1, 1, 2, 4, 10, 26, 76, 232, 764, 2620, 9496, 35696, 140152, 568504, 2390480, 10349536, 46206736, 211799312, 997313824, 4809701440, 23758664096

### Permutations with no cycles of length 3

Réf. R1 85.

**HIS2** A0090 Dérivée logarithmique Suite P-récurrente

**HIS1** N0496 exponentielle

$$a(n) = (n^3 - n^2)a(n-1) + (6n^3 - 5n^2 + n)a(n-3) + (24n^3 - 26n^2 + 9n - 1)a(n-4)$$

$$\frac{1}{\exp\left(\frac{1}{3}z\right) (1-z)^3}$$

1, 1, 2, 4, 16, 80, 520, 3640, 29120, 259840, 2598400, 28582400, 343235200,  
4462057600, 62468806400, 936987251200, 14991796019200,  
254860532326400, 4587501779660800

Réf. AS1 797.

**HIS2** A0096 Approximants de Padé

**HIS1** N0522 Fraction rationnelle

$$\frac{z(z-2)}{(z-1)^3}$$

0, 2, 5, 9, 14, 20, 27, 35, 44, 54, 65, 77, 90, 104, 119, 135, 152, 170, 189, 209,  
230, 252, 275, 299, 324, 350, 377, 405, 434, 464, 495, 527, 560, 594, 629,  
665, 702, 740, 779

### Partitions of $n$ into parts of 2 kinds

Réf. RS4 90. RCI 199.

HIS2 A0097 Euler

HIS1 N0525 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 2, 1, 1, 1, 1, 1, 1, \dots$$

1, 2, 5, 9, 17, 28, 47, 73, 114, 170, 253, 365, 525, 738, 1033, 1422, 1948, 2634, 3545, 4721, 6259, 8227, 10767, 13990, 18105, 23286, 29837, 38028, 48297, 61053

### Partitions of $n$ into parts of 2 kinds

Réf. RS4 90. RCI 199.

HIS2 A0098 Euler

HIS1 N0533 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 2, 2, 1, 1, 1, 1, 1, 1, \dots$$

1, 2, 5, 10, 19, 33, 57, 92, 147, 227, 345, 512, 752, 1083, 1545, 2174, 3031, 4179, 5719, 7752, 10438, 13946, 18519, 24428, 32051, 41805, 54265, 70079, 90102, 115318

### Compositions

Réf. R1 155.

**HIS2** A0100 Approximants de Padé

**HIS1** N0543 Fraction rationnelle

$$\frac{1}{(1 - z - z^2) (1 - z - z^2 - z^3)}$$

1, 2, 5, 11, 23, 47, 94, 185

### Compositions

Réf. R1 155.

**HIS2** A0102 Approximants de Padé

**HIS1** N0551 Fraction rationnelle

$$\frac{1}{(1 - z - z^2 - z^3) (1 - z - z^2 - z^3 - z^4)}$$

1, 2, 5, 12, 27, 59, 127

### Catalan's Numbers

**Réf.** AMM 72 973 65. RCI 101. C1 53. PLC 2 109 71. MAG 61 211 88.

**HIS2** A0108 Inverse fonctionnel Suite P-récurrente

**HIS1** N0577 algébrique

${}^2F_1$  ([1, 1/2], [2], 4 z)

$n a(n) = (4n - 6) a(n - 1)$

$$\frac{2}{1 + (1 - 4z)^{1/2}}$$

1, 1, 2, 5, 14, 42, 132, 429, 1430, 4862, 16796, 58786, 208012, 742900,  
2674440, 9694845, 35357670, 129644790, 477638700, 1767263190,  
6564120420, 24466267020

### Bell Numbers

**Réf.** MOC 16 418 62. AMM 71 498 64. PSPM 19 172 71. GO71.

**HIS2** A0110 Recoupements

**HIS1** N0585 exponentielle

$$\exp(\exp(z) - 1)$$

1, 1, 2, 5, 15, 52, 203, 877, 4140, 21147, 115975, 678570, 4213597,  
27644437, 190899322, 1382958545, 10480142147, 82864869804,  
682076806159, 5832742205057

### Euler numbers

**Réf.** JDM 7 171 1881. JO61 238. NET 110. DKB 262. C1 259.

**HIS2** A0111 Inverse fonctionnel

**HIS1** N0587 exponentielle (complexe)

$$\tan(1/4 \text{ Pi} + 1/2 z) - 1$$

1, 1, 1, 2, 5, 16, 61, 272, 1385, 7936, 50521, 353792, 2702765, 22368256, 199360981, 1903757312, 19391512145, 209865342976, 2404879675441, 29088885112832

### Denumerants

**Réf.** R1 152.

**HIS2** A0115 Euler erreur au 19è terme corrigée avec la

**HIS1** N0098 Fraction rationnelle formule

$$\frac{1}{(1-z)(1-z^2)(1-z^5)}$$

1, 1, 2, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14, 16, 18, 20, 22, 26, 29

### Representations of n as a sum of distinct Fibonacci

Réf. FQ 4 305 66. BR72 54.

HIS2 A0119 Euler

HIS1 N0037 Produit infini

$$\prod_{n \geq 1} (1 + Z^{c(n)})$$

**c(n) = 1, 2, 3, 5, 8, ... nombres de Fibonacci**

1, 1, 1, 2, 1, 2, 2, 1, 3, 2, 2, 3, 1, 3, 3, 2, 4, 2, 3, 3, 1, 4, 3, 3, 5, 2, 4, 4, 2, 5, 3,  
3, 4, 1, 4, 4, 3, 6, 3, 5, 5, 2, 6, 4, 4, 6, 2, 5, 5, 3, 6, 3, 4, 4, 1, 5, 4, 4, 7, 3, 6, 6,  
3, 8, 5, 5, 7, 2, 6, 6, 4

### Representations of n as a sum of Fibonacci numbers

Réf. FQ 4 304 66.

HIS2 A0121 Euler

HIS1 N0088 Produit infini

$$(1 + z) \prod_{n \geq 1} (1 + Z^{c(n)})$$

**c(n) = 1, 2, 3, 5, 8, ... nombres de Fibonacci**

1, 2, 2, 3, 3, 3, 4, 3, 4, 5, 4, 5, 4, 4, 6, 5, 6, 6, 5, 6, 4, 5, 7, 6, 8, 7, 6, 8, 6, 7, 8,  
6, 7, 5, 5, 8, 7, 9, 9, 8, 10, 7, 8, 10, 8, 10, 8, 7, 10, 8, 9, 9, 7, 8, 5, 6, 9, 8, 11,  
10, 9, 12, 9, 11, 13

## Binary partitions (partitions of $2n$ into powers of 2)

Réf. FQ 4 117 66. PCPS 66 376 69. AB71 400. BIT 17 387 77.

HIS2 A0123 Euler

HIS1 N0378 Produit infini

$$\frac{1}{(1-z)^2 (1-z^2)^2 (1-z^4)^2 (1-z^8)^2 (1-z^{16})^2 (1-z^{32})^2 \dots}$$

1, 2, 4, 6, 10, 14, 20, 26, 36, 46, 60, 74, 94, 114, 140, 166, 202, 238, 284, 330, 390, 450, 524, 598, 692, 786, 900, 1014, 1154, 1294, 1460, 1626, 1828, 2030, 2268, 2506

## Central polygonal numbers

Réf. MAG 30 150 46. HO50 22. FQ 3 296 65.

HIS2 A0124 Approximants de Padé

HIS1 N0391 Fraction rationnelle

$$\frac{1 - z + z^2}{(1 - z)^3}$$

1, 2, 4, 7, 11, 16, 22, 29, 37, 46, 56, 67, 79, 92, 106, 121, 137, 154, 172, 191, 211, 232, 254, 277, 301, 326, 352, 379, 407, 436, 466, 497, 529, 562, 596, 631, 667, 704, 742



### Slicing a cake with n slices

Réf. MAG 30 150 46. FQ 3 296 65.

HIS2 A0125 Approximants de Padé

HIS1 N0419 Fraction rationnelle

$1+C(n,1)+C(n,2)+C(n,3)$

$$\frac{1 - 2z + 2z^2}{(1 - z)^4}$$

1, 2, 4, 8, 15, 26, 42, 64, 93, 130, 176, 232, 299, 378, 470, 576, 697, 834, 988, 1160, 1351, 1562, 1794, 2048, 2325, 2626, 2952, 3304, 3683, 4090, 4526, 4992, 5489

### A nonlinear binomial sum

Réf. FQ 3 295 65.

HIS2 A0126 Approximants de Padé

HIS1 N0421 Fraction rationnelle

$$\frac{1 - z + z^3}{(1 - z - z^2)(z - 1)^2}$$

1, 2, 4, 8, 15, 27, 47, 80, 134, 222, 365, 597, 973, 1582, 2568, 4164, 6747, 10927, 17691, 28636, 46346, 75002, 121369, 196393, 317785, 514202, 832012, 1346240

$$\mathbf{C(n,4)+C(n,3)+ \dots +C(n,0)}$$

Réf. MAG 30 150 46. FQ 3 296 65.

HIS2 A0127 Approximants de Padé

HIS1 N0427 Fraction rationnelle

$$\frac{1 - 3z + 4z^2 - 2z^3 + z^4}{(1 - z)^5}$$

1, 2, 4, 8, 16, 31, 57, 99, 163, 256, 386, 562, 794, 1093, 1471, 1941, 2517, 3214, 4048, 5036, 6196, 7547, 9109, 10903, 12951, 15276, 17902, 20854, 24158, 27841, 31931

$$\mathbf{A \text{ nonlinear binomial sum}}$$

Réf. FQ 3 295 65.

HIS2 A0128 Approximants de Padé

HIS1 N0428 Fraction rationnelle

$$\frac{1 - 2z + z^2 + z^3}{(1 - z - z^2)(1 - z)^3}$$

1, 2, 4, 8, 16, 31, 58, 105, 185, 319, 541, 906, 1503, 2476, 4058, 6626, 10790, 17537, 28464, 46155, 74791, 121137, 196139, 317508, 513901, 831686, 1345888

## Pell numbers

**Réf.** FQ 4 373 66. RI89 43.

**HIS2** A0129      Approximants de Padé

**HIS1** N0552      Fraction rationnelle

$$a(n) = 2 a(n-1) + a(n-2)$$

$$\frac{1}{1 - 2z - z^2}$$

1, 2, 5, 12, 29, 70, 169, 408, 985, 2378, 5741, 13860, 33461, 80782, 195025, 470832, 1136689, 2744210, 6625109, 15994428, 38613965, 93222358, 225058681

**Réf.** R1 85.

**HIS2** A0138      Dérivée logarithmique      Suite P-réccurente

**HIS1** N0638      exponentielle

$$a(n) = (n-1) a(n-1) - (n^3 - 9n^2 + 26n - 24) a(n-4) + (n^4 - 14n^3 + 71n^2 - 154n + 120) a(n-5)$$

$$\frac{1}{\exp(1/4 z)^4 (1-z)}$$

1, 1, 2, 6, 18, 90, 540, 3780, 31500, 283500, 2835000, 31185000, 372972600, 4848643800, 67881013200, 1018215198000, 16294848570000, 277012425690000, 4986223662420000

**Réf.** CJM 15 257 63. AB71 363.

**HIS2** A0139            Hypergéométrique            Suite P-récurrente  
**HIS1** N0651            algébrique                            équation du 3<sup>è</sup> degré

$$1/2 (n + 1) (2 n + 1) a(n) = 3/4 (3 n - 1) (3 n - 2) a(n - 1)$$

$${}_3F_2 \left( [1, 4/3, 5/3], [3, 5/2], 27 z / 4 \right)$$

1, 2, 6, 22, 91, 408, 1938, 9614, 49335, 260130, 1402440, 7702632,  
 42975796, 243035536, 1390594458, 8038677054, 46892282815,  
 275750636070, 1633292229030, 9737153323590

### Factorial numbers

**Réf.** AS1 833. MOC 24 231 70.

**HIS2** A0142            Dérivée logarithmique            Suite P-récurrente  
**HIS1** N0659            Fraction rationnelle

$$a(n) = n a(n-1)$$

$$\frac{1}{1 - z}$$

1, 1, 2, 6, 24, 120, 720, 5040, 40320, 362880, 3628800, 39916800,  
 479001600, 6227020800, 87178291200, 1307674368000, 20922789888000,  
 355687428096000

**Oriented rooted trees with n nodes****Réf.** R1 138.**HIS2** A0151

Euler

**HIS1** N0701

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2 a(n)$$

1, 2, 7, 26, 107, 458, 2058, 9498, 44947, 216598, 1059952, 5251806,  
 26297238, 132856766, 676398395, 3466799104, 17873808798,  
 92630098886, 482292684506

**Réf.** R1 188.**HIS2** A0153

Dérivée logarithmique

Suite P-récurrente

**HIS1** N0706

exponentielle

$$a(n) = n a(n-1) + (n - 2) a(n-2)$$

$$\frac{1}{(1 - z)^3 \exp(z)}$$

0, 1, 2, 7, 32, 181, 1214, 9403, 82508, 808393, 8743994, 103459471,  
 1328953592, 18414450877, 273749755382, 4345634192131,  
 73362643649444

### Coefficients of iterated exponentials

Réf. SMA 11 353 45.

**HIS2** A0154 Recouplements

**HIS1** N0710 exponentielle (log)

L'inverse fonctionnel est  $\exp(\exp(z)-1)$  : Les nombres de Bell.

$$- \ln(1 + \ln(1 - z)) + 1$$

1, 1, 2, 7, 35, 228, 1834, 17382, 195866, 2487832, 35499576, 562356672,  
9794156448, 186025364016, 3826961710272, 84775065603888,  
2011929826983504

### Double factorials

Réf. AMM 55 425 48. MOC 24 231 70.

**HIS2** A0165 Dérivée logarithmique Suite P-récurrente

**HIS1** N0742 Fraction rationnelle

$2^{(m-1)}$  (m)

$$\frac{1}{1 - 2z}$$

1, 2, 8, 48, 384, 3840, 46080, 645120, 10321920, 185794560, 3715891200,  
81749606400, 1961990553600, 51011754393600, 1428329123020800

**Subfactorial or rencontres numbers**

**Réf.** R1 65. DB1 168. RY63 23. MOC 21 502 67. C1 182.

**HIS2** A0166 Dérivée logarithmique Suite P-récurrente

**HIS1** N0766 exponentielle

$$a(n) = (n - 2) a(n-1) + (n - 2) a(n-2)$$

$$1$$

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$$(1 - z) \exp(z)$$

1, 0, 1, 2, 9, 44, 265, 1854, 14833, 133496, 1334961, 14684570, 176214841,  
2290792932, 32071101049, 481066515734, 7697064251745,  
130850092279664

**Réf.** CJM 15 254 63; 33 1039 81. JCT 3 121 67.

**HIS2** A0168 hypergéométrique-LLL Suite P-récurrente

**HIS1** N0768 algébrique

$${}_2F_1([1, 1/2], [3], 12z)$$

$$(n + 1) a(n) = (12n - 18) a(n - 1)$$

$$- 1 + 18 z + \left( - (12 z - 1) \right)^{3/2}$$

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$$54 z^2$$

1, 2, 9, 54, 378, 2916, 24057, 208494, 1876446, 17399772, 165297834,  
1602117468, 15792300756, 157923007560, 1598970451545,  
16365932856990

**Réf.** BA9. R1 128.

**HIS2** A0169 Inverse fonctionnel L'inverse fonctionnel est  $z \exp(-z)$

**HIS1** N0771 exponentielle

$n^{(n-1)}$

-  $W(-z)$

1, 2, 9, 64, 625, 7776, 117649, 2097152, 43046721, 1000000000,  
25937424601, 743008370688, 23298085122481, 793714773254144,  
29192926025390625

### Card matching

**Réf.** R1 193.

**HIS2** A0172 P-réurrences Suite P-récurrente

**HIS1** N0781 \* titre modifié

$n$

$(n,k)^3 = a(n)$

$k=0$

$$a(n) (n-1)^2 = (7n^2 - 21n + 16) a(n-1) + (8n^2 - 32n + 32) a(n-2)$$

1, 2, 10, 56, 346, 2252, 15184, 104960, 739162, 5280932, 38165260,  
278415920, 2046924400, 15148345760, 112738423360, 843126957056,  
6332299624282



### Ménage numbers

Réf. CJM 10 478 58. R1 197.

**HIS2** A0179 P-réurrences Suite P-récurrente

**HIS1** N0815

$$\begin{aligned}
 (n - 39/7) a(n) &= (n^2 - 47/7 n + 43/7) a(n - 1) + \\
 &\quad (1/7 n^2 + n - 65/7) a(n - 2) + \\
 &\quad (- 6/7 n^2 + 67/7 n - 26) a(n - 3) + \\
 &\quad (- 6/7 n + 36/7) a(n - 4)
 \end{aligned}$$

1, 1, 0, 1, 2, 13, 80, 579, 4738, 43387, 439792, 4890741, 59216642,  
 775596313, 10927434464, 164806435783, 2649391469058,  
 45226435601207, 817056406224416

### Permutations with no cycles of length 3

Réf. R1 83.

**HIS2** A0180 Dérivée logarithmique Suite P-récurrente

**HIS1** N0816 exponentielle

$$a(n) = (3n - 4) a(n - 1) + (3n - 6) a(n - 2)$$

1

---


$$(1 - 3z) \exp(z)$$

1, 2, 13, 116, 1393, 20894, 376093, 7897952, 189550849, 5117872922,  
 153536187661, 5066694192812, 182400990941233, 7113638646708086

**Lucas numbers****Réf.** HW1 148. HO69. C1 46.**HIS2** A0204      Approximants de Padé**HIS1** N0924      Fraction rationnelle

$$a(n) = a(n-1) + a(n-2)$$

$$\frac{1 + 2z}{1 - z - z^2}$$

1, 3, 4, 7, 11, 18, 29, 47, 76, 123, 199, 322, 521, 843, 1364, 2207, 3571, 5778, 9349, 15127, 24476, 39603, 64079, 103682, 167761, 271443, 439204, 710647, 1149851

**Réf.** SMA 20 23 54. R1 233. JCT 7 292 69.**HIS2** A0211      Approximants de Padé**HIS1** N0953      Fraction rationnelle

$$\frac{(1 + z)(4z - 3)}{(1 - z)(1 - z - z^2)}$$

3, 5, 6, 9, 13, 20, 31, 49, 78, 125, 201, 324, 523, 845, 1366, 2209, 3573, 5780, 9351, 15129, 24478, 39605, 64081, 103684, 167763, 271445, 439206, 710649, 1149853

**Réf.****HIS2** A0212      Approximants de Padé**HIS1** N0966      Fraction rationnellePartie entière de  $(n^2)/3$ .

$$\frac{1 - z + 2z^2 - z^3 + 2z^4 - z^5}{(z^2 + z + 1)(1 - z)^3}$$

1, 1, 3, 5, 8, 12, 16, 21, 27, 33, 40, 48, 56, 65, 75, 85, 96, 108, 120, 133, 147,  
 161, 176, 192, 208, 225, 243, 261, 280, 300, 320, 341, 363, 385, 408, 432,  
 456, 481, 507, 533

**Réf.** FQ 1(3) 72 63; 2 260 64.**HIS2** A0213      Approximants de Padé**HIS1** N0975      Fraction rationnelle

$$\frac{(z - 1)(1 + z)}{1 - z - z^2 - z^3}$$

1, 1, 1, 3, 5, 9, 17, 31, 57, 105, 193, 355, 653, 1201, 2209, 4063, 7473, 13745,  
 25281, 46499, 85525, 157305, 289329, 532159, 978793, 1800281, 3311233,  
 6090307, 11201821

### Triangular numbers

Réf. D1 2 1. RS3. B1 189. AS1 828.

HIS2 A0217 Approximants de Padé

HIS1 N1002 Fraction rationnelle

$$\frac{1}{(1-z)^3}$$

1, 3, 6, 10, 15, 21, 28, 36, 45, 55, 66, 78, 91, 105, 120, 136, 153, 171, 190, 210, 231, 253, 276, 300, 325, 351, 378, 406, 435, 465, 496, 528, 561, 595, 630, 666, 703, 741

### Planar partitions of n

Réf. MA15 2 332. PCPS 63 1099 67. AN76 241.

HIS2 A0219 Euler

HIS1 N1016 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1-z^n)^{c(n)}}$$

$$c(n) = 1, 2, 3, 4, 5, 6, 7, \dots$$

1, 3, 6, 13, 24, 48, 86, 160, 282, 500, 859, 1479, 2485, 4167, 6879, 11297, 18334, 29601, 47330, 75278, 118794, 186475, 290783, 451194, 696033, 1068745, 1632658

$$2^{(n-1)}$$

Réf. BA9.

**HIS2** A0225      Approximants de Padé

**HIS1** N1059      fraction rationnelle

$$1$$

---


$$(1 - 2z)(1 - z)$$

1, 3, 7, 15, 31, 63, 127, 255, 511, 1023, 2047, 4095, 8191, 16383, 32767,  
65535, 131071, 262143, 524287, 1048575, 2097151, 4194303, 8388607,  
16777215, 33554431

Réf. R165.

**HIS2** A0240      Dérivée logarithmique      Suite P-récurrente

**HIS1** N1111      exponentielle

$$a(n) = (n-2)a(n-1) + (2n-3)a(n-2) + (n-2)a(n-3)$$

$$\frac{\exp(-z)(z^2 - z + 1)}{(z-1)^2}$$

1, 0, 3, 8, 45, 264, 1855, 14832, 133497, 1334960, 14684571, 176214840,  
2290792933, 32071101048, 481066515735, 7697064251744,  
130850092279665

### Crossing number of complete graph with n nodes

Réf. GU60. AMM 80 53 73.

**HIS2** A0241      Approximants de Padé      conjecture connue

**HIS1** N1115      Fraction rationnelle

$$\frac{1 + z + z^2}{(z - 1)^5 (z + 1)^3}$$

0, 0, 0, 0, 1, 3, 9, 18, 36, 60, 100, 150, 225, 315, 441, 588

### Powers of 3

Réf. BA9.

**HIS2** A0244      Approximants de Padé

**HIS1** N1129      fraction rationnelle

$$\frac{1}{1 - 3z}$$

1, 3, 9, 27, 81, 243, 729, 2187, 6561, 19683, 59049, 177147, 531441,  
1594323, 4782969, 14348907, 43046721, 129140163, 387420489,  
1162261467

Réf. QAM 14 407 56. MOC 29 216 75. FQ 14 397 76.

**HIS2** A0245            Hypergéométrique            Suite P-récurrente

**HIS1** N1130            algébrique

$$(n + 2) a(n) = (5n + 2) a(n - 1) + (-4n + 6) a(n - 2)$$

$${}_2F_1\left(\left[\frac{3}{2}, 2\right], [4], 4z\right)$$

$$\frac{8z}{(1 + (1 - 4z)^{\frac{1}{2}})^3}$$

1, 3, 9, 28, 90, 297, 1001, 3432, 11934, 41990, 149226, 534888, 1931540,  
7020405, 25662825, 94287120, 347993910, 1289624490, 4796857230,  
17902146600

### Permutations of length n with odd cycles

Réf. R1 87.

**HIS2** A0246            Hypergéométrique            Suite P-récurrente

**HIS1** N1137            algébrique

$$a(n) = a(n - 1) + (n^2 - 3n + 2) a(n - 2)$$

$$\frac{1}{(1 - z)^{\frac{3}{2}} (1 + z)^{\frac{1}{2}}}$$

0, 1, 1, 3, 9, 45, 225, 1575, 11025, 99225, 893025, 9823275, 108056025,  
1404728325, 18261468225, 273922023375, 4108830350625,  
69850115960625

### Associated Stirling numbers

Réf. R1 76. DB1 296. C1 222.

**HIS2** A0247      Approximants de Padé

**HIS1** N1141      fraction rationnelle

$$\frac{3 - 2z}{1 - 4z + 5z^2 - 2z^3}$$

3, 10, 25, 56, 119, 246, 501, 1012, 2035, 4082, 8177, 16368, 32751, 65518,  
131053, 262124, 524267, 1048554, 2097129, 4194280, 8388583, 16777190,  
33554405

### Forests with n nodes and height at most 1

Réf. JCT 3 134 67; 5 102 68. C1 91.

**HIS2** A0248      Dérivée logarithmique

**HIS1** N1148      exponentielle

$$\exp(\exp(z) z)$$

1, 1, 3, 10, 41, 196, 1057, 6322, 41393, 293608, 2237921, 18210094,  
157329097, 1436630092, 13810863809, 139305550066, 1469959371233



### Stirling numbers of first kind

**Réf.** AS1 833. DKB 226.

**HIS2** A0254 équations différentielles Suite P-récurrente

**HIS1** N1165 exponentielle (log)

$$a(n) = (2n - 1)a(n - 1) + (-n^2 + 2n - 1)a(n - 2)$$

$$\frac{1 - \ln(1 - z)}{(1 - z)^2}$$

1, 3, 11, 50, 274, 1764, 13068, 109584, 1026576, 10628640, 120543840,  
1486442880, 19802759040, 283465647360, 4339163001600,  
70734282393600

**Réf.** R1 188. DKB 263. MAG 52 381 68.

**HIS2** A0255 Dérivée logarithmique Suite P-récurrente

**HIS1** N1166 exponentielle

$$a(n) = na(n-1) + (n-1)a(n-2)$$

$$\frac{\exp(-z)}{(1 - z)^2}$$

1, 1, 3, 11, 53, 309, 2119, 16687, 148329, 1468457, 16019531, 190899411,  
2467007773, 34361893981, 513137616783, 8178130767479

Réf. CJM 15 268 63.

HIS2 A0256

LLL

Suite P-récurrente

HIS1 N1173

algébrique 3è degré

$$1/2 (n - 1) (n - 3) (2n - 1) a(n) =$$

$$1/16 (n - 3) (104n^2 - 430n + 414) a(n - 1)$$

$$+ 1/16 (n - 3) (27n^2 - 81n + 60) a(n - 2)$$

1, 1, 0, 1, 3, 12, 52, 241, 1173, 5929, 30880, 164796, 897380, 4970296,  
27930828, 158935761, 914325657, 5310702819, 31110146416,  
183634501753, 1091371140915

### Rooted bicubic maps

Réf. CJM 15 269 63.

HIS2 A0257

Hypergéométrique

Suite P-récurrente

HIS1 N1175

algébrique

${}_2F_1([1, 3/2], [4], 8z)$

$$(n + 2) a(n) = (8n - 4) a(n - 1)$$

$$\frac{3 (1 - 8z)^{1/2} + 8z - 3 (1 - 8z)^{3/2}}{4 (1 + (1 - 8z)^{1/2})^3} z$$

1, 3, 12, 56, 288, 1584, 9152, 54912, 339456

### Coefficients of iterated exponentials

Réf. SMA 11 353 45. PRV A32 2342 85.

HIS2 A0258 Recoupements

HIS1 N1178 exponentielle

$$\exp(\exp(\exp(z) - 1) - 1)$$

1, 1, 3, 12, 60, 358, 2471, 19302, 167894, 1606137, 16733779, 188378402,  
2276423485, 29367807524, 402577243425, 5840190914957,  
89345001017415

Réf. CJM 14 32 62.

HIS2 A0260 Hypergéométrique Suite P-récurrente

HIS1 N1187 algébrique algébrique du 4<sup>e</sup> degré

${}_4F_3 ([1, 1/2, 3/4, 5/4], [2, 5/3, 4/3], (256/27) z)$

$$1/9 (3n - 1) (3n - 2) n a(n) =$$

$$8/27 (4n - 5) (4n - 3) (2n - 3) a(n - 1)$$

1, 1, 3, 13, 68, 399, 2530, 16965, 118668, 857956, 6369883, 48336171,  
373537388, 2931682810, 23317105140, 187606350645, 1524813969276,  
12504654858828

**Réf.** R1 188.

**HIS2** A0261      Dérivée logarithmique      Suite P-récurrente

**HIS1** N1189      exponentielle

$$a(n) = (n + 1) a(n - 1) + (n - 2) a(n - 2)$$

$$\frac{\exp(-z)}{(1-z)^4}$$

0, 1, 3, 13, 71, 465, 3539, 30637, 296967, 3184129, 37401155, 477471021,  
6581134823, 97388068753, 1539794649171, 25902759280525,  
461904032857319

**Réf.** RCI 194. PSPM 19 172 71.

**HIS2** A0262      Dérivée logarithmique      Suite P-récurrente

**HIS1** N1190      exponentielle

$$a(n) = (2n-1) a(n-1) - (n-1) (n-2) a(n-2)$$

$$\exp(z/(1-z))$$

1, 1, 3, 13, 73, 501, 4051, 37633, 394353, 4596553, 58941091, 824073141,  
12470162233, 202976401213, 3535017524403, 65573803186921,  
1290434218669921

**Réf.** R1 85.

**HIS2** A0266      Dérivée logarithmique      Suite P-récurrente

**HIS1** N1211      exponentielle

$$a(n) = (n - 1) a(n - 1) + (-n + 2) a(n - 2) + (n^2 - 5n + 6) a(n - 3)$$

$$\frac{1}{\exp(1/2 z)^2 (1 - z)}$$

1, 1, 1, 3, 15, 75, 435, 3045, 24465, 220185, 2200905, 24209955, 290529855,  
3776888115, 52876298475, 793144477125, 12690313661025,  
215735332237425, 3883235945814225

### Coefficients of iterated exponentials

**Réf.** SMA 11 353 45.

**HIS2** A0268      Recoupements

**HIS1** N1218      exponentielle

L'inverse fonctionnel est  $\exp(\exp(\exp(z)-1)-1)$

$$- \ln(1 + \ln(1 + \ln(1 - z))) + 1$$

1, 1, 3, 15, 105, 947, 10472, 137337, 2085605, 36017472, 697407850,  
14969626900, 352877606716, 9064191508018, 252024567201300,  
7542036496650006

### Sums of ménage numbers

**Réf.** AH21 2 79. CJM 10 478 58. R1 198.

**HIS2** A0271 P-réurrences Suite P-récurrente

**HIS1** N1222

$$a(n) = (n + 1) a(n - 1) + (n + 1) a(n - 2) + a(n - 3)$$

0, 0, 1, 3, 16, 96, 675, 5413, 48800, 488592, 5379333, 64595975, 840192288,  
11767626752, 176574062535, 2825965531593, 48052401132800,  
865108807357216

**Réf.** BA9. R1 128.

**HIS2** A0272 Inverse fonctionnel

**HIS1** N1227 exponentielle f.g. exponentielle

$n^{(n-2)}$

L'inverse est  $\ln(1+z)/(1+z)$

$$z + W(-z)$$

---

z

1, 3, 16, 125, 1296, 16807, 262144, 4782969, 100000000, 2357947691,  
61917364224, 1792160394037, 56693912375296, 1946195068359375

### Permutations of length n by rises

Réf. DKB 263. R1 210 (divided by 2).

**HIS2** A0274 Dérivée logarithmique Suite P-récurrente

**HIS1** N1236 exponentielle

$$a(n) = (n + 1) a(n - 1) + (n + 3) a(n - 2) + (-n + 3) a(n - 3) + (-n + 2) a(n - 4)$$

$$\frac{2 - 5z^2 + 2z^3 - z^4}{2(1 - z)^4 \exp(z)}$$

1, 3, 18, 110, 795, 6489, 59332, 600732, 6674805, 80765135, 1057289046,  
14890154058, 224497707343, 3607998868005

### Associated Stirling numbers

Réf. R1 75. C1 256.

**HIS2** A0276 équations différentielles Suite P-récurrente

**HIS1** N1248 exponentielle (log) Formule de B. Salvy

$$a(n) = (2n + 2) a(n - 1) - (n^2 + 1) a(n - 2) - (n^2 + n) a(n - 3)$$

$$\frac{2z - 6 \ln(-z + 1) + 3}{(1 - z)^4}$$

3, 20, 130, 924, 7308, 64224, 623376, 6636960, 76998240, 967524480,  
13096736640, 190060335360, 2944310342400, 48503818137600,  
846795372595200

Réf. FQ 3 129 65. BR72 53.

**HIS2** A0285      Approximants de Padé

**HIS1** N1309      Fraction rationnelle

$$\frac{1 + 3z}{1 - z - z^2}$$

1, 4, 5, 9, 14, 23, 37, 60, 97, 157, 254, 411, 665, 1076, 1741, 2817, 4558, 7375, 11933, 19308, 31241, 50549, 81790, 132339, 214129, 346468, 560597, 907065, 1467662

### Rooted polyhedral graphs with n edges

Réf. CJM 15 265 63.

**HIS2** A0287      LLL      suite corrigée avec la formule de  
**HIS1** N1326      algébrique      récurrence.

$$(n + 4) a(n) = (3/2 n - 3) a(n - 1) + (8 n + 4) a(n - 2) \\ + (15/2 n + 6) a(n - 3) + (2 n + 3) a(n - 4)$$

$$\frac{(1 + z) ((-4z + 1)^{3/2} - 1 + 6z - 6z^2 - 4z^3 - 6z^4) + 4z^5}{2(2z^5(z + 2)^3(1 + z))}$$

1, 0, 4, 6, 24, 66, 214, 676, 2209, 7296, 24460, 82926, 284068, 981882, 3421318, 12007554, 42416488, 150718770, 538421590, 1932856590, 6969847484



### Tetranacci numbers

Réf. FQ 2 260 64.

HIS2 A0288 Approximants de Padé

HIS1 N1332 Fraction rationnelle

$$\frac{1 - z^2 - 2z^3}{1 - z - z^2 - z^3 - z^4}$$

1, 1, 1, 1, 4, 7, 13, 25, 49, 94, 181, 349, 673, 1297, 2500, 4819, 9289, 17905, 34513, 66526, 128233, 247177, 476449, 918385, 1770244, 3412255, 6577333, 12678217

### The squares

Réf. BA9.

HIS2 A0290 Approximants de Padé

HIS1 N1350 Fraction rationnelle

$$\frac{1 + z}{(1 - z)^3}$$

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400, 441, 484, 529, 576, 625, 676, 729, 784, 841, 900, 961, 1024, 1089, 1156, 1225, 1296

### Tetrahedral numbers

Réf. D1 2 4. RS3. B1 194. AS1 828.

**HIS2** A0292      Approximants de Padé

**HIS1** N1363      Fraction rationnelle

$C(n,3)$

$$\frac{1}{(1-z)^4}$$

1, 4, 10, 20, 35, 56, 84, 120, 165, 220, 286, 364, 455, 560, 680, 816, 969, 1140, 1330, 1540, 1771, 2024, 2300, 2600, 2925, 3276, 3654, 4060, 4495, 4960, 5456, 5984

### Related to solid partitions

Réf. PNISI 26 135 60. PCPS 63 1100 67.

**HIS2** A0294      Euler

**HIS1** N1372      Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^{c(n)})}$$

$c(n) = 1, 3, 6, 10, \dots, \text{ nombres triangulaires}$

1, 1, 4, 10, 26, 59, 141, 310, 692, 1483, 3162, 6583, 13602, 27613, 55579, 110445, 217554, 424148, 820294, 1572647, 2992892, 5652954, 10605608, 19765082

### Eulerian numbers $2^n - n - 1$

Réf. R1 215. DB1 151.

**HIS2** A0295      Approximants de Padé

**HIS1** N1382      Fraction rationnelle

$$\frac{1}{(1 - 2z)(1 - z)^2}$$

0, 1, 4, 11, 26, 57, 120, 247, 502, 1013, 2036, 4083, 8178, 16369, 32752, 65519, 131054, 262125, 524268, 1048555, 2097130, 4194281, 8388584, 16777191, 33554406

Réf. FQ 14 69 76. ANY 319 464 79.

**HIS2** A0296      Dérivée logarithmique      Différences finies

**HIS1** N1387      exponentielle      des nombres de Bell

$$\exp(\exp(z) - 1 - z)$$

1, 0, 1, 1, 4, 11, 41, 162, 715, 3425, 17722, 98253, 580317, 3633280, 24011157, 166888165, 1216070380, 9264071767, 73600798037, 608476008122, 5224266196935

**Réf.** R1 150. FQ 15 194 77.

**HIS2** A0297      Approximants de Padé

**HIS1** N1393      Fraction rationnelle

$$\frac{(z - 2)^2}{(1 - z)^4}$$

4, 12, 25, 44, 70, 104, 147, 200, 264, 340, 429, 532, 650, 784, 935, 1104,  
1292, 1500, 1729, 1980, 2254, 2552, 2875, 3224, 3600, 4004, 4437, 4900,  
5394, 5920, 6479

### Powers of 4

**Réf.** BA9.

**HIS2** A0302      Approximants de Padé

**HIS1** N1428      Fraction rationnelle

$$\frac{1}{1 - 4z}$$

1, 4, 16, 64, 256, 1024, 4096, 16384, 65536, 262144, 1048576, 4194304,  
16777216, 67108864, 268435456, 1073741824, 4294967296, 17179869184

### Coefficients of iterated exponentials

Réf. SMA 11 353 45. PRV A32 2342 85.

HIS2 A0307 Recoupements

HIS1 N1455 exponentielle

$$\exp(\exp(\exp(\exp(z) - 1) - 1) - 1)$$

1, 1, 4, 22, 154, 1304, 12915, 146115, 1855570, 26097835, 402215465,  
6734414075, 121629173423, 2355470737637, 48664218965021,  
1067895971109199

### Rooted maps with 2n nodes

Réf. CJM 14 416 62.

HIS2 A0309 Hypergéométrique Suite P-récurrente

HIS1 N1460 algébrique Algébrique du 3è degré

$1/2 (n + 1) (2n + 1) a(n) = 3/2 (3n - 1) (3n - 2) a(n - 1)$

$$- 1/12 ((1458 z^2 + 270 z - 1 + 12 (-2 + 27 z)^{1/2} z)^{1/2} z^{1/2})$$

$$- 162 (-2 + 27 z)^{1/2} z^{1/2} (z^{3/2})^{1/3} + (1458 z^2 + 270 z - 1)^{1/2}$$

$$- 12 (-2 + 27 z)^{1/2} z^{1/2} z^{1/2} + 162 (-2 + 27 z)^{1/2} z^{1/2} (z^{3/2})^{1/3} + 12 z + 2)$$

1, 4, 24, 176, 1456, 13056, 124032, 1230592, 12629760, 133186560,  
1436098560

### Coefficients of iterated exponentials

Réf. SMA 11 353 45.

**HIS2** A0310 Recouplements

**HIS1** N1464 exponentielle (log)

$$- \ln(1 + \ln(1 + \ln(1 + \ln(1 - z)))) + 1$$

1, 1, 4, 26, 234, 2696, 37919, 630521, 12111114, 264051201, 6445170229,  
174183891471, 5164718385337, 166737090160871, 5822980248613990

### Schroeder's fourth problem

Réf. RCI 197. C1 224.

**HIS2** A0311 Inverse fonctionnel

**HIS1** N1465 exponentielle

L'inverse fonctionnel de  $1 + 2z - \exp(z)$

$$- W(-1/2 * \exp(-1/2 + 1/2*z)) - 1/2 + 1/2*z$$

1, 1, 1, 4, 26, 236, 2752, 39208, 660032, 12818912, 282137824, 6939897856,  
188666182784, 5617349020544, 181790703209728, 6353726042486272,  
238513970965257728

Réf. BA9.

**HIS2** A0312 Inverse fonctionnel

**HIS1** N1469 exponentielle

$a(n) = n^n$

L'inverse fonctionnel de  $z \exp(1/(z+1))/(z+1)$

$$\frac{W(-z)}{-1 - W(-z)}$$

1, 4, 27, 256, 3125, 46656, 823543, 16777216, 387420489, 10000000000,  
285311670611, 8916100448256, 302875106592253, 11112006825558016

### Permutations of length n by rises

Réf. DKB 263.

**HIS2** A0313 Approximants de Padé Suite P-récurrente

**HIS1** N1477 exponentielle Conjecture

$$-z^6 + 6z^5 - 18z^4 + 22z^3 - 27z^2 - 6$$

---


$$(z-1)^5 \exp(z)$$

1, 4, 30, 220, 1855, 17304, 177996, 2002440, 24474285, 323060540,  
4581585866, 69487385604, 1122488536715

### Pentanacci numbers

Réf. FQ 2 260 64.

**HIS2** A0322      Approximants de Padé

**HIS1** N1542      Fraction rationnelle

$$\frac{\begin{array}{ccccccc} & & 4 & & 3 & & 2 \\ & & z & + & 2z & + & z \\ & 3 & & & & & - 1 \end{array}}{\begin{array}{ccccccc} 5 & & 4 & & 3 & & 2 \\ z & + & z & + & z & + & z \\ & & & & & & + z \\ & & & & & & - 1 \end{array}}$$

1, 1, 1, 1, 1, 5, 9, 17, 33, 65, 129, 253, 497, 977, 1921, 3777, 7425, 14597,  
28697, 56417, 110913, 218049, 428673, 842749, 1656801, 3257185,  
6403457, 12588865, 24749057

### Pentagonal numbers

Réf. D1 2 1. B1 189. HW1 284. FQ 8 84 70.

**HIS2** A0326      Approximants de Padé

**HIS1** N1562      Fraction rationnelle

$$\frac{(1 + 2z)}{(1 - z)^3}$$

1, 5, 12, 22, 35, 51, 70, 92, 117, 145, 176, 210, 247, 287, 330, 376, 425, 477,  
532, 590, 651, 715, 782, 852, 925, 1001, 1080, 1162, 1247, 1335, 1426, 1520,  
1617, 1717



### Square pyramidal numbers

Réf. D1 2 2. B1 194. AS1 813.

HIS2 A0330 Approximants de Padé

HIS1 N1574 Fraction rationnelle

$$\frac{1 + z}{(1 - z)^4}$$

1, 5, 14, 30, 55, 91, 140, 204, 285, 385, 506, 650, 819, 1015, 1240, 1496, 1785, 2109, 2470, 2870, 3311, 3795, 4324, 4900, 5525, 6201, 6930, 7714, 8555, 9455, 10416

### Figurate numbers C(n,4)

Réf. D1 2 7. RS3. B1 196. AS1 828.

HIS2 A0332 Approximants de Padé

HIS1 N1578 Fraction rationnelle

$$\frac{1}{(1 - z)^5}$$

1, 5, 15, 35, 70, 126, 210, 330, 495, 715, 1001, 1365, 1820, 2380, 3060, 3876, 4845, 5985, 7315, 8855, 10626, 12650, 14950, 17550, 20475, 23751, 27405, 31465

Réf. HB67 16.

**HIS2** A0337      Approximants de Padé

**HIS1** N1587      Fraction rationnelle

$$\frac{1}{(z - 1) (2z - 1)^2}$$

1, 5, 17, 49, 129, 321, 769, 1793, 4097, 9217, 20481, 45057, 98305, 212993,  
458753, 983041, 2097153, 4456449, 9437185, 19922945, 41943041,  
88080385

Réf. SMA 20 23 54.

**HIS2** A0338      Approximants de Padé

**HIS1** N1589      Fraction rationnelle

$$\frac{(2z - 5) (z^2 + z + 1)}{(z - 1)^3}$$

5, 18, 42, 75, 117, 168, 228, 297, 375, 462, 558, 663, 777, 900, 1032, 1173,  
1323, 1482, 1650, 1827, 2013, 2208, 2412, 2625, 2847, 3078, 3318, 3567

Réf. DKB 260.

**HIS2** A0340 Approximants de Padé

**HIS1** N1592 Fraction rationnelle

$$\frac{1}{(1 - 3z)(1 - z)^2}$$

1, 5, 18, 58, 179, 543, 1636, 4916, 14757, 44281, 132854, 398574, 1195735, 3587219, 10761672, 32285032, 96855113, 290565357, 871696090, 2615088290, 7845264891

Réf. QAM 14 407 56. MOC 29 216 75. FQ 14 397 76.

**HIS2** A0344 Hypergéométrique Suite P-récurrente

**HIS1** N1602 algébrique

${}_3F_2([5/2, 3], [6], 4z)$

$(n + 4)(n - 1)a(n) = 2(n + 1)(2n + 1)a(n - 1)$

$$\frac{32z}{(1 + (1 - 4z)^{1/2})^5}$$

1, 5, 20, 75, 275, 1001, 3640, 13260, 48450, 177650, 653752, 2414425, 8947575, 33266625, 124062000, 463991880, 1739969550, 6541168950, 24647883000

Réf. BAMS 74 74 68. JCT 13 215 72.

HIS2 A0346

LLL

Suite P-récurrente

HIS1 N1611

algébrique

$$n a(n) = (8n - 6) a(n - 1) + (-16n + 24) a(n - 2)$$

$$\frac{1 - 4z - (-(-1 + 4z)^{3/2})}{2(z^2 - 8z + 16z^3)}$$

1, 5, 22, 93, 386, 1586, 6476, 26333, 106762, 431910, 1744436, 7036530,  
28354132, 114159428, 459312152, 1846943453, 7423131482, 29822170718,  
119766321572, 480832549478

### Powers of 5

Réf. BA9.

HIS2 A0351

Approximants de Padé

HIS1 N1620

Fraction rationnelle

$$\frac{1}{1 - 5z}$$

1, 5, 25, 125, 625, 3125, 15625, 78125, 390625, 1953125, 9765625,  
48828125, 244140625, 1220703125, 6103515625, 30517578125,  
152587890625

### Permutations of length n by number of runs

Réf. DKB 260.

**HIS2** A0352      Approximants de Padé

**HIS1** N1629      Fraction rationnelle

$$\frac{5 - 6z}{(3z - 1)(2z - 1)(z - 1)^2}$$

5, 29, 118, 418, 1383, 4407, 13736, 42236, 128761, 390385, 1179354,  
3554454

Réf. LU91 1 223. R1 83.

**HIS2** A0354      Dérivée logarithmique      Suite P-récurrente

**HIS1** N1631      exponentielle

$$1/2 a(n) = (n - 3/2) a(n - 1) + (n - 2) a(n - 2)$$

$$\frac{1}{(1 - 2z) \exp(z)}$$

1, 1, 5, 29, 233, 2329, 27949, 391285, 6260561, 112690097, 2253801941,  
49583642701, 1190007424825, 30940193045449, 866325405272573

### Hamiltonian rooted maps with $2n$ nodes

Réf. CJM 14 416 62.

**HIS2** A0356      hypergéométrique      Suite P-récurrente

**HIS1** N1647      Intégrales elliptiques

$${}_2F_1\left(\left[\frac{1}{2}, -\frac{1}{2}\right], [2], 16z\right)$$

1, 5, 35, 294, 2772, 28314, 306735, 3476330, 40831076, 493684828,  
6114096716

### Coefficients of iterated exponentials

Réf. SMA 11 353 45. PRV A32 2342 85.

**HIS2** A0357      Recoupements

**HIS1** N1648      exponentielle

$$\exp(\exp(\exp(\exp(\exp(z) - 1) - 1) - 1) - 1)$$

1, 1, 5, 35, 315, 3455, 44590, 660665, 11035095, 204904830, 4183174520,  
93055783320, 2238954627848, 57903797748386, 1601122732128779

### Coefficients of iterated exponentials

Réf. SMA 11 353 45.

HIS2 A0359 Recoupements

HIS1 N1654 exponentielle (log)

$$- \ln(1 + \ln(1 + \ln(1 + \ln(1 + \ln(1 - z)))))) + 1$$

1, 1, 5, 40, 440, 6170, 105315, 2120610, 49242470, 1296133195,  
38152216495, 1242274374380, 44345089721923, 1722416374173854,  
72330102999829054

Réf. CMB 4 32 61 (divided by 3).

HIS2 A0381 Approximants de Padé

HIS1 N1692 Fraction rationnelle

$$\frac{2 - z - 2z^2}{1 - 2z + z^3}$$

2, 3, 4, 6, 9, 14, 22, 35, 56, 90, 145, 234, 378, 611, 988, 1598, 2585, 4182,  
6766, 10947, 17712, 28658, 46369, 75026, 121394, 196419, 317812, 514230

### Restricted permutations

Réf. CMB 4 32 61 (divided by 4).

HIS2 A0382 Approximants de Padé

HIS1 N1696 Fraction rationnelle

$$\frac{6 - z - 2z^2 - 4z^3 - z^4}{1 - 2z + z^4}$$

6, 11, 20, 36, 65, 119, 218, 400, 735, 1351, 2484, 4568, 8401, 15451, 28418, 52268, 96135, 176819, 325220, 598172, 1100209, 2023599, 3721978, 6845784

### Hexanacci numbers

Réf. FQ 2 302 64.

HIS2 A0383 Approximants de Padé

HIS1 N1697 Fraction rationnelle

$$\frac{4z^4 + 3z^3 + 2z^2 + z - 1}{z^6 + z^5 + z^4 + z^3 + z^2 + z - 1}$$

1, 1, 1, 1, 1, 1, 6, 11, 21, 41, 81, 161, 321, 636, 1261, 2501, 4961, 9841, 19521, 38721, 76806, 152351, 302201, 599441, 1189041, 2358561, 4678401, 9279996, 18407641



## Hexagonal numbers

Réf. D1 2 2. B1 189.

**HIS2** A0384      Approximants de Padé

**HIS1** N1705      Fraction rationnelle

$$\frac{1 + 3z}{(1 - z)^3}$$

1, 6, 15, 28, 45, 66, 91, 120, 153, 190, 231, 276, 325, 378, 435, 496, 561, 630, 703, 780, 861, 946, 1035, 1128, 1225, 1326, 1431, 1540, 1653, 1770, 1891, 2016, 2145, 2278

## Rencontres numbers

Réf. R1 65.

**HIS2** A0387      Dérivée logarithmique      Suite P-récurrente

**HIS1** N1716      exponentielle

$a(n) = (3n - 4)a(n - 3) + (n - 2)a(n - 4) + (n - 2)a(n - 1) + (3n - 3)a(n - 2)$

$$\frac{z^4 - 4z^3 + 7z^2 - 4z + 2}{(z - 1)^3 \exp(z)}$$

1, 0, 6, 20, 135, 924, 7420, 66744, 667485, 7342280, 88107426, 1145396460, 16035550531, 240533257860, 3848532125880, 65425046139824

### Binomial coefficients C(n,5)

Réf. D1 2 7. RS3. B1 196. AS1 828.

HIS2 A0389 Approximants de Padé

HIS1 N1719 Fraction rationnelle

$$\frac{1}{(1-z)^6}$$

1, 6, 21, 56, 126, 252, 462, 792, 1287, 2002, 3003, 4368, 6188, 8568, 11628, 15504, 20349, 26334, 33649, 42504, 53130, 65780, 80730, 98280, 118755, 142506

### Stirling numbers of second kind

Réf. AS1 835. DKB 223.

HIS2 A0392 Approximants de Padé

HIS1 N1734 Fraction rationnelle

$$\frac{1}{(1-z)(1-2z)(1-3z)}$$

1, 6, 25, 90, 301, 966, 3025, 9330, 28501, 86526, 261625, 788970, 2375101, 7141686, 21457825, 64439010, 193448101, 580606446, 1742343625, 5228079450

### Stirling numbers of first kind

Réf. AS1 833. DKB 226.

**HIS2** A0399 Tableaux généralisés Suite P-récurrente

**HIS1** N1762 exponentielle (log)

$$a(n) = -3 n^2 a(n - 1) + (n^3 - 3 n^2 + 3 n - 1) a(n - 3) \\ + (n^3 - 3 n^2 - 3 n) a(n - 2)$$

$$\frac{\ln(1 - z)^2}{2(1 - z)}$$

1, 6, 35, 225, 1624, 13132, 118124, 1172700, 12753576, 150917976,  
1931559552, 26596717056, 392156797824, 6165817614720,  
102992244837120

### Powers of 6

Réf. BA9.

**HIS2** A0400 Approximants de Padé

**HIS1** N1765 Fraction rationnelle

$$\frac{1}{1 - 6z}$$

1, 6, 36, 216, 1296, 7776, 46656, 279936, 1679616, 10077696, 60466176,  
362797056, 2176782336, 13060694016, 78364164096, 470184984576,  
2821109907456

### Coefficients of iterated exponentials

Réf. SMA 11 353 45. PRV A32 2342 85.

HIS2 A0405 Recoupements

HIS1 N1781 exponentielle

$$\exp(\exp(\exp(\exp(\exp(\exp(z) - 1) - 1) - 1) - 1) - 1) - 1)$$

1, 1, 6, 51, 561, 7556, 120196, 2201856, 45592666, 1051951026,  
26740775306, 742069051906, 22310563733864, 722108667742546,  
25024187820786357

### Coefficients of iterated exponentials

Réf. SMA 11 353 45.

HIS2 A0406 Recoupements

HIS1 N1782 exponentielle (log)

$$- \ln(1 + \ln(1 + \ln(1 + \ln(1 + \ln(1 + \ln(1 - z)))))) + 1$$

1, 1, 6, 57, 741, 12244, 245755, 5809875, 158198200, 4877852505,  
168055077875, 6400217406500, 267058149580823, 12118701719205803,  
594291742526530761

**Réf.** MOC 3 168 48; 9 174 55. CMA 2 25 70. MAN 191 98 71.

**HIS2** A0407            Hypergéométrique            Suite P-récurrente

**HIS1** N1784            algébrique

$(2n)!/(2.n!)$

$$\frac{1}{(1 - 4z)^{3/2}}$$

1, 6, 60, 840, 15120, 332640, 8648640, 259459200, 8821612800,  
335221286400, 14079294028800, 647647525324800, 32382376266240000

### Powers of 7

**Réf.** BA9.

**HIS2** A0420            Approximants de Padé

**HIS1** N1874            Fraction rationnelle

$$\frac{1}{1 - 7z}$$

1, 7, 49, 343, 2401, 16807, 117649, 823543, 5764801, 40353607, 282475249,  
1977326743, 13841287201, 96889010407, 678223072849, 4747561509943

### Permutations of length n by number of peaks

Réf. DKB 261.

**HIS2** A0431      Approximants de Padé

**HIS1** N0824      Fraction rationnelle

$$\frac{2}{1 - 8z + 20z^2 - 16z^3}$$

2, 16, 88, 416, 1824, 7680, 31616, 128512, 518656, 2084864, 8361984,  
33497088, 134094848, 536608768, 2146926592, 8588754944, 34357248000,  
137433710592

### Powers of rooted tree enumerator

Réf. R1 150.

**HIS2** A0439      Approximants de Padé

**HIS1** N1965      Fraction rationnelle

$$\frac{(3 - 2z)(z^2 - 3z + 3)}{(1 - z)^5}$$

9, 30, 69, 133, 230, 369, 560, 814, 1143, 1560, 2079, 2715, 3484, 4403, 5490,  
6764, 8245, 9954, 11913, 14145, 16674, 19525, 22724, 26298, 30275, 34684,  
39555

Réf. CC55 742. RCI 217. JO61 7.

**HIS2** A0447 Approximants de Padé

**HIS1** N2006 Fraction rationnelle

$$\frac{z (1 + 6z + z^2)}{(z - 1)^4}$$

0, 1, 10, 35, 84, 165, 286, 455, 680, 969, 1330, 1771, 2300, 2925, 3654, 4495, 5456, 6545, 7770, 9139, 10660, 12341, 14190, 16215, 18424, 20825, 23426, 26235, 29260

### Rencontres numbers

Réf. R1 65.

**HIS2** A0449 Dérivée logarithmique Suite P-récurrente

**HIS1** N2009 exponentielle

$(n - 1) a(n) = (n + 2) (n - 2) a(n - 1) + (n + 2) (n + 1) a(n - 2)$

$$\frac{6 - 18z + 45z^2 - 49z^3 + 30z^4 - 9z^5 + z^6}{6(1 - z)^4 \exp(z)}$$

1, 0, 10, 40, 315, 2464, 22260, 222480, 2447445, 29369120, 381798846, 5345183480, 80177752655, 1282844041920, 21808348713320, 392550276838944

### Stirling numbers of second kind

Réf. AS1 835. DKB 223.

HIS2 A0453 Approximants de Padé

HIS1 N2018 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 2z) (1 - 3z) (1 - 4z)$$

1, 10, 65, 350, 1701, 7770, 34105, 145750, 611501, 2532530, 10391745,  
42355950, 171798901, 694337290, 2798806985, 11259666950, 45232115901

### Stirling numbers of first kind

Réf. AS1 833. DKB 226.

HIS2 A0454 Tableaux généralisés

HIS1 N2022 exponentielle (log)

$$- \ln(1 - z)^3$$


---


$$6 (1 - z)$$

1, 10, 85, 735, 6769, 67284, 723680, 8409500, 105258076, 1414014888,  
20313753096, 310989260400, 5056995703824, 87077748875904,  
1583313975727488



**Réf.** TOH 37 259 33. JO39 152. DB1 296. C1 256.

**HIS2** A0457            Hypergéométrique            Suite P-récurrente

**HIS1** N2028            algébrique            f.g. exponentielle

$$(n - 1) a(n) = (2n + 1) n a(n - 1)$$

$$\frac{z}{(1 - 2z)^{5/2}}$$

1, 10, 105, 1260, 17325, 270270, 4729725, 91891800, 1964187225,  
45831035250, 1159525191825, 31623414322500, 924984868933125,  
28887988983603750

### Eulerian numbers

**Réf.** R1 215. DB1 151. JCT 1 351 66. DKB 260. C1 243.

**HIS2** A0460            Approximants de Padé

**HIS1** N2047            Fraction rationnelle

$$\frac{z(1 + z - 4z^2)}{(1 - z)^3(1 - 2z)^2(1 - 3z)}$$

0, 1, 11, 66, 302, 1191, 4293, 14608, 47840, 152637, 478271, 1479726,  
4537314, 13824739, 41932745

### Rencontres numbers

Réf. R1 65.

**HIS2** A0475      Approximants de Padé      Suite P-récurrente

**HIS1** N2132      exponentielle

$$a(n) = (2n - 1) a(n - 1) - 5 a(n - 2) - 10 a(n - 3) + (5n - 10) a(n - 4) \\ (6n - 5) a(n - 5) + (2n - 1) a(n - 6)$$

$$\begin{array}{cccccccc} 8 & & 7 & & 6 & & 5 & & 4 & & 3 & & 2 \\ z^8 - 16z^7 + 94z^6 - 280z^5 + 481z^4 - 496z^3 + 312z^2 - 96z + 24 \end{array}$$

---


$$24 (1 - z)^5 \exp(z)$$

1, 0, 15, 70, 630, 5544, 55650, 611820, 7342335, 95449640, 1336295961,  
20044438050, 320711010620, 5452087178160, 98137569209940,  
1864613814984984

### Associated Stirling numbers

Réf. R1 76. DB1 296. C1 222.

**HIS2** A0478      Approximants de Padé

**HIS1** N2138      Fraction rationnelle

$$- 12z^3 + 40z^2 - 45z + 15$$

---


$$(3z - 1)^2 (2z - 1)^3 (z - 1)$$

15, 105, 490, 1918, 6825, 22935, 74316, 235092, 731731, 2252341, 6879678,  
20900922, 63259533

### Stirling numbers of second kind

Réf. AS1 835. DKB 223.

HIS2 A0481 Approximants de Padé

HIS1 N2141 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 2z) (1 - 3z) (1 - 4z) (1 - 5z)$$

1, 15, 140, 1050, 6951, 42525, 246730, 1379400, 7508501, 40075035,  
210766920, 1096190550, 5652751651, 28958095545, 147589284710,  
749206090500

### Stirling numbers of first kind

Réf. AS1 833. DKB 226.

HIS2 A0482 Tableaux généralisés

HIS1 N2142 exponentielle (log)

$$\ln(1 - z)^4$$


---


$$24 (1 - z)$$

1, 15, 175, 1960, 22449, 269325, 3416930, 45995730, 657206836,  
9957703756, 159721605680, 2706813345600, 48366009233424,  
909299905844112

### Restricted permutations

Réf. CMB 4 32 61.

**HIS2** A0496 Approximants de Padé

**HIS1** N2231 Fraction rationnelle

$$\frac{4 \left( 6 - z - 2 z^2 - 4 z^3 - z^4 \right)}{(1 - z) \left( 1 - z - z^2 - z^3 \right)}$$

24, 44, 80, 144, 260, 476, 872, 1600, 2940, 5404, 9936, 18272, 33604, 61804, 113672, 209072, 384540, 707276, 1300880, 2392688, 4400836, 8094396, 14887912

### Related to remainder in gaussian quadrature

Réf. MOC 1 53 43.

**HIS2** A0515 hypergéométrique Suite P-récurrente

**HIS1** N2087 Intégrales elliptiques

$(n - 1)^2 a(n) = 4 (2n - 1) (2n - 3) a(n - 1)$

$${}_2F_1\left(\left[\frac{1}{2}, \frac{3}{2}\right], [1], 16z\right)$$

1, 12, 180, 2800, 44100, 698544, 11099088, 176679360, 2815827300, 44914183600, 716830370256, 11445589052352, 182811491808400, 2920656969720000

Réf. R1 16. MAS 31 79 63.

HIS2 A0522

Dérivée

Suite P-récurrente

HIS1 N0589

exponentielle

$$a(n) = a(n-1) n + (2 - n) a(n-2)$$

$$\exp(z)$$


---


$$1 - z$$

1, 2, 5, 16, 65, 326, 1957, 13700, 109601, 986410, 9864101, 108505112,  
1302061345, 16926797486, 236975164805, 3554627472076,  
56874039553217

### Powers of rooted tree enumerator

Réf. R1 150.

HIS2 A0529

Approximants de Padé

HIS1 N2202

Fraction rationnelle

$$\frac{(z - 2) (3z^3 - 12z^2 + 18z - 10)}{(1 - z)^6}$$

20, 74, 186, 388, 721, 1236, 1995, 3072, 4554, 6542, 9152, 12516, 16783,  
22120, 28713, 36768, 46512, 58194, 72086, 88484, 107709, 130108, 156055,  
185952

### Sums of cubes

Réf. AS1 813.

**HIS2** A0537 Approximants de Padé

**HIS1** N1972 Fraction rationnelle

$$\frac{1 + 4z + z^2}{(1 - z)^5}$$

1, 9, 36, 100, 225, 441, 784, 1296, 2025, 3025, 4356, 6084, 8281, 11025,  
14400, 18496, 23409, 29241, 36100, 44100, 53361, 64009, 76176, 90000,  
105625, 123201

### Sums of fourth powers

Réf. AS1 813.

**HIS2** A0538 Approximants de Padé

**HIS1** N2179 Fraction rationnelle

$$\frac{(1 + z)(z^2 + 10z + 1)}{(z - 1)^6}$$

1, 17, 98, 354, 979, 2275, 4676, 8772, 15333, 25333, 39974, 60710, 89271,  
127687, 178312, 243848, 327369, 432345, 562666, 722666, 917147,  
1151403, 1431244

### Sums of 5th powers

Réf. AS1 813.

**HIS2** A0539 Approximants de Padé

**HIS1** N2280 Fraction rationnelle

$$\frac{1 + 26z + 66z^2 + 26z^3 + z^4}{(1 - z)^7}$$

1, 33, 276, 1300, 4425, 12201, 29008, 61776, 120825, 220825, 381876,  
630708, 1002001, 1539825, 2299200, 3347776, 4767633, 6657201, 9133300,  
12333300

### Sums of 6th powers

Réf. AS1 813.

**HIS2** A0540 Approximants de Padé

**HIS1** N2322 Fraction rationnelle

$$\frac{(1 + z)(z^4 + 56z^3 + 246z^2 + 56z + 1)}{(z - 1)^8}$$

1, 65, 794, 4890, 20515, 67171, 184820, 446964, 978405, 1978405, 3749966,  
6735950, 11562759, 19092295, 30482920, 47260136, 71397705, 105409929,  
152455810

### Sums of 7th powers

Réf. AS1 815.

**HIS2** A0541 Dérivée logarithmique

**HIS1** N2343 Fraction rationnelle

$$z^6 + 120 z^5 + 1191 z^4 + 2416 z^3 + 1191 z^2 + 120 z + 1$$

---


$$(z - 1)^9$$

1, 129, 2316, 18700, 96825, 376761, 1200304, 3297456, 8080425, 18080425,  
37567596, 73399404, 136147921, 241561425, 412420800, 680856256,  
1091194929

### Sums of eighth powers

Réf. AS1 815.

**HIS2** A0542 Recoupements

**HIS1** N2358 Fraction rationnelle

$$1 + 247 z + 4293 z^2 + 15619 z^3 + 15619 z^4 + 4293 z^5 + 247 z^6 + z^7$$

---


$$(1 - z)^{10}$$

1, 257, 6818, 72354, 462979, 2142595, 7907396, 24684612, 67731333,  
167731333, 382090214, 812071910, 1627802631, 3103591687, 5666482312



**Discordant permutations**

Réf. SMA 20 23 54.

**HIS2** A0561 Approximants de Padé**HIS1** N1773 Fraction rationnelle

$$\frac{4z^3 - 5z^2 - 20z - 6}{(1-z)^4}$$

6, 44, 145, 336, 644, 1096, 1719, 2540, 3586, 4884, 6461, 8344, 10560,  
 13136, 16099, 19476, 23294, 27580, 32361, 37664, 43516, 49944, 56975,  
 64636, 72954, 81956

**Discordant permutations**

Réf. SMA 20 23 54.

**HIS2** A0562 Approximants de Padé**HIS1** N1994 Fraction rationnelle

$$\frac{9 + 50z + 35z^2 - 15z^3 + 4z^4 - 2z^5}{(1-z)^5}$$

9, 95, 420, 1225, 2834, 5652, 10165, 16940, 26625, 39949, 57722, 80835,  
 110260, 147050, 192339, 247342, 313355, 391755, 484000, 591629, 716262,  
 859600

**Discordant permutations**

Réf. SMA 20 23 54.

**HIS2** A0563      Approximants de Padé**HIS1** N2109      Fraction rationnelle

$$\frac{8z^5 + 6z^4 - 10z^3 + 128z^2 + 114z + 13}{(1-z)^6}$$

13, 192, 1085, 3880, 10656, 24626, 50380, 94128, 163943, 270004, 424839,  
 643568, 944146, 1347606, 1878302, 2564152, 3436881, 4532264, 5890369,  
 7555800

**Discordant permutations**

Réf. SMA 20 23 54.

**HIS2** A0564      Approximants de Padé**HIS1** N2208      Fraction rationnelle

$$\frac{2z^7 + 4z^6 - 36z^5 + 29z^4 + 72z^3 + 411z^2 + 231z + 20}{(1-z)^7}$$

20, 371, 2588, 11097, 35645, 94457, 218124, 454220, 872648, 1571715,  
 2684936, 4388567, 6909867, 10536089, 15624200, 22611330, 32025950,  
 44499779

### Discordant permutations

Réf. SMA 20 23 54.

**HIS2** A0565      Approximants de Padé

**HIS1** N2275      Fraction rationnelle

$$\frac{12z^7 - 6z^6 + 88z^5 - 131z^4 - 548z^3 - 1123z^2 - 448z - 31}{(1-z)^8}$$

31, 696, 5823, 29380, 108933, 327840, 848380, 1958004, 4130895, 8107024, 14990889, 26372124, 44470165, 72305160, 113897310, 174496828, 260846703

### Heptagonal numbers

Réf. D1 2 2. B1 189.

**HIS2** A0566      Approximants de Padé

**HIS1** N1826      Fraction rationnelle

$$\frac{1 + 4z}{(1-z)^3}$$

1, 7, 18, 34, 55, 81, 112, 148, 189, 235, 286, 342, 403, 469, 540, 616, 697, 783, 874, 970, 1071, 1177, 1288, 1404, 1525, 1651, 1782, 1918, 2059, 2205, 2356, 2512, 2673

### Octagonal numbers

Réf. D1 2 1. B1 189.

**HIS2** A0567      Approximants de Padé

**HIS1** N1901      Fraction rationnelle

$$\frac{1 + 5z}{(1 - z)^3}$$

1, 8, 21, 40, 65, 96, 133, 176, 225, 280, 341, 408, 481, 560, 645, 736, 833, 936, 1045, 1160, 1281, 1408, 1541, 1680, 1825, 1976, 2133, 2296, 2465, 2640, 2821, 3008

### From expansion $(1+x+x^2)^n$

Réf. JCT 1 372 66. C1 78.

**HIS2** A0574      Approximants de Padé

**HIS1** N1219      Fraction rationnelle

$$\frac{3 - 2z}{(1 - z)^6}$$

3, 16, 51, 126, 266, 504, 882, 1452, 2277, 3432, 5005, 7098, 9828, 13328, 17748, 23256, 30039, 38304, 48279, 60214, 74382, 91080, 110630, 133380, 159705, 190008

**Cubes**

Réf. BA9.

**HIS2** A0578 Approximants de Padé**HIS1** N1905 Fraction rationnelle

$$\frac{1 + 4z + z^2}{(z - 1)^4}$$

1, 8, 27, 64, 125, 216, 343, 512, 729, 1000, 1331, 1728, 2197, 2744, 3375, 4096, 4913, 5832, 6859, 8000, 9261, 10648, 12167, 13824, 15625, 17576, 19683

**Binomial coefficients C(n,6)**

Réf. D1 2 7. RS3. B1 196. AS1 828.

**HIS2** A0579 Approximants de Padé**HIS1** N1847 Fraction rationnelle

$$\frac{1}{(1 - z)^7}$$

1, 7, 28, 84, 210, 462, 924, 1716, 3003, 5005, 8008, 12376, 18564, 27132, 38760, 54264, 74613, 100947, 134596, 177100, 230230, 296010, 376740, 475020, 593775

**Binomial coefficients C(n,7)**

Réf. D1 2 7. RS3. B1 196. AS1 828.

**HIS2** A0580      Approximants de Padé

**HIS1** N1911      Fraction rationnelle

$$\frac{1}{(1 - z)^8}$$

1, 8, 36, 120, 330, 792, 1716, 3432, 6435, 11440, 19448, 31824, 50388,  
77520, 116280, 170544, 245157, 346104, 480700, 657800, 888030, 1184040,  
1560780, 2035800

**Binomial coefficients C(n,8)**

Réf. D1 2 7. RS3. B1 196. AS1 828.

**HIS2** A0581      Approximants de Padé

**HIS1** N1976      Fraction rationnelle

$$\frac{1}{(1 - z)^9}$$

1, 9, 45, 165, 495, 1287, 3003, 6435, 12870, 24310, 43758, 75582, 125970,  
203490, 319770, 490314, 735471, 1081575, 1562275, 2220075, 3108105,  
4292145

### Binomial coefficients C(n,9)

Réf. D1 2 7. RS3. B1 196. AS1 828.

**HIS2** A0582      Approximants de Padé

**HIS1** N2013      Fraction rationnelle

$$\frac{1}{(1 - z)^{10}}$$

1, 10, 55, 220, 715, 2002, 5005, 11440, 24310, 48620, 92378, 167960,  
293930, 497420, 817190, 1307504, 2042975, 3124550, 4686825, 6906900,  
10015005, 14307150

### Fourth powers

Réf. BA9.

**HIS2** A0583      Approximants de Padé

**HIS1** N2154      Fraction rationnelle

$$\frac{(1 + z)^2 (z^2 + 10z + 1)}{(1 - z)^5}$$

1, 16, 81, 256, 625, 1296, 2401, 4096, 6561, 10000, 14641, 20736, 28561,  
38416, 50625, 65536, 83521, 104976, 130321, 160000, 194481, 234256,  
279841, 331776

**5th powers**

Réf. BA9.

**HIS2** A0584 Approximants de Padé**HIS1** N2277 Fraction rationnelle

$$\frac{1 + 26z + 66z^2 + 26z^3 + z^4}{(1 - z)^6}$$

1, 32, 243, 1024, 3125, 7776, 16807, 32768, 59049, 100000, 161051, 248832, 371293, 537824, 759375, 1048576, 1419857, 1889568, 2476099, 3200000, 4084101

**Partitions of n into distinct primes**

Réf. PNISI 21 186 55. PURB 107 285 57.

**HIS2** A0586 Euler**HIS1** N0004 Produit infini

$$\prod_{n \geq 1} (1 + z^{c(n)})$$

**c(n) = 2, 3, 5, 7, 11, ... Les nombres premiers**

1, 0, 1, 1, 0, 2, 0, 2, 1, 1, 2, 1, 2, 2, 2, 2, 3, 2, 4, 3, 4, 4, 4, 5, 5, 5, 6, 5, 6, 7, 6, 9, 7, 9, 9, 9, 11, 11, 11, 13, 12, 14, 15, 15, 17, 16, 18, 19, 20, 21, 23, 22, 25, 26, 27, 30, 29, 32, 32, 35, 37, 39, 40, 42



Réf. JIA 76 153 50. FQ 7 448 69.

**HIS2** A0587 Recouplements 1/A0296

**HIS1** N0755 exponentielle

$$1$$


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$$\exp(\exp(z) - 1 - z)$$

1, 0, 1, 1, 2, 9, 9, 50, 267, 413, 2180, 17731, 50533, 110176, 1966797,  
9938669, 8638718, 278475061, 2540956509, 9816860358, 27172288399,  
725503033401

Réf. QAM 14 407 56. MOC 29 216 75. FQ 14 397 76.

**HIS2** A0588 Hypergéométrique Suite P-récurrente

**HIS1** N1866 algébrique

${}_2F_1$  ([4, 7/2], [8], 4 z)

$$128 z$$


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$$\left(1 + \left(1 - 4z\right)^{\frac{1}{2}}\right)^7$$

1, 7, 35, 154, 637, 2548, 9996, 38760, 149226, 572033, 2187185, 8351070,  
31865925, 121580760, 463991880, 1771605360, 6768687870, 25880277150

Réf. QAM 14 407 56. MOC 29 216 75.

**HIS2** A0589            Hypergéométrique            Suite P-récurrente

**HIS1** N2048            algébrique

${}_2F_1$  ([6, 11/2], [12], 4 z)

$$\frac{1}{(1/2 + 1/2 (1 - 4z)^{1/2} (1 - 11z))}$$

1, 11, 77, 440, 2244, 10659, 48279, 211508, 904475, 3798795, 15737865,  
64512240, 262256280, 1059111900, 4254603804, 17018415216,  
67837293986

Réf. QAM 14 407 56. MOC 29 216 75.

**HIS2** A0590            Hypergéométrique            Suite P-récurrente

**HIS1** N2104            algébrique

${}_2F_1$  ([13/2, 7], [14], 4 z)

$$\frac{1}{(1/2 + 1/2 (1 - 4z)^{1/2} (1 - 13z))}$$

1, 13, 104, 663, 3705, 19019, 92092, 427570, 1924065, 8454225, 36463440,  
154969620, 650872404, 2707475148, 11173706960, 45812198536,  
186803188858

### Ramanujan function

Réf. PLMS 51 4 50. MOC 24 495 70.

HIS2 A0594 Euler

HIS1 N2237 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = -24, -24, -24, -24, \dots$$

1, 24, 252, 1472, 4830, 6048, 16744, 84480, 113643, 115920, 534612, 370944, 577738, 401856, 1217160, 987136, 6905934, 2727432, 10661420, 7109760, 4219488

### Central factorial numbers

Réf. RCI 217.

HIS2 A0596 Approximants de Padé

HIS1 N1505 Fraction rationnelle

$$\frac{4 + 21z + 14z^2 + z^3}{(1 - z)^7}$$

4, 49, 273, 1023, 3003, 7462, 16422, 32946, 61446, 108031, 180895, 290745, 451269, 679644, 997084, 1429428, 2007768, 2769117, 3757117, 5022787, 6625311

### Central factorial numbers

Réf. RCI 217.

HIS2 A0597 Dérivée logarithmique

HIS1 N2287 Fraction rationnelle

$$\frac{z^5 + 75z^4 + 603z^3 + 1065z^2 + 460z + 36}{(z-1)^{10}}$$

36, 820, 7645, 44473, 191620, 669188, 1999370, 5293970, 12728936,  
28285400, 58856655, 115842675, 217378200, 391367064, 679524340,  
1142659012

### A partition function

Réf. CAY 2 278. JACS 53 3084 31. AMS 26 304 55.

HIS2 A0601 Approximants de Padé \* titre modifié

HIS1 N0392 Fraction rationnelle

$$\frac{1}{(1+z)^2 (z^2+z+1)^4 (z-1)}$$

1, 2, 4, 7, 11, 16, 23, 31, 41, 53, 67, 83, 102, 123, 147, 174, 204, 237, 274,  
314, 358, 406, 458, 514, 575, 640, 710, 785, 865, 950, 1041, 1137, 1239,  
1347, 1461, 1581

### Partitions of $n$ into prime parts

Réf. PNISI 21 183 55. AMM 95 711 88.

HIS2 A0607 Euler

HIS1 N0093 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^{c(n)})}$$

$c(n) = 2, 3, 5, 7, \dots, \text{les nombres premiers}$

1, 0, 1, 1, 1, 2, 2, 3, 3, 4, 5, 6, 7, 9, 10, 12, 14, 17, 19, 23, 26, 30, 35, 40, 46, 52, 60, 67, 77, 87, 98, 111, 124, 140, 157, 175, 197, 219, 244, 272, 302, 336, 372, 413, 456, 504, 557

### Preferential arrangements of $n$ things

Réf. CAY 4 113. PLMS 22 341 1891. AMM 69 7 62. PSPM 19 172 71. DM 48 102 84.

HIS2 A0670 Inverse fonctionnel

HIS1 N1191 exponentielle

$$1 - \exp(z)$$

-----

$$\exp(z) - 2$$

1, 1, 3, 13, 75, 541, 4683, 47293, 545835, 7087261, 102247563, 1622632573, 28091567595, 526858348381, 10641342970443, 230283190977853

**Réf.** QJM 47 110 16. FMR 1 112. DA63 2 283. PSAM 15 101 63.

**HIS2** A0680            Hypergéométrique            Suite P-récurrente

**HIS1** N1793            algébrique            f.g. exponentielle double

$$(2n+1)/2^n$$

$$a(n) = n (2n-1) a(n-1)$$

$$\frac{1}{(1 - 2z)^{1/2}}$$

1, 6, 90, 2520, 113400, 7484400, 681080400, 81729648000,  
12504636144000, 2375880867360000, 548828480360160000,  
151476660579404160000

### Stochastic matrices of integers

**Réf.** PSAM 15 101 63. SS70.

**HIS2** A0681            équations différentielles            Suite P-récurrente

**HIS1** N1250            exponentielle (algébrique)            Formule de B. Salvy

$$a(n) = -1/2 (n - 1) (-2n + 2) a(n - 1) - 1/2 (n - 1) (n^2 - 4n + 4) a(n - 2)$$

$$\frac{\exp(z/2)}{(1 - z)^{1/2}}$$

1, 1, 3, 21, 282, 6210, 202410, 9135630, 545007960, 41514583320,  
3930730108200, 452785322266200, 62347376347779600,  
10112899541133589200

### Partitions of n into distinct odd parts

Réf. PLMS 42 553 36. CJM 4 383 52.

HIS2 A0700 Euler

HIS1 N0078 Produit infini

$$\prod_{n \geq 1} (1 + z^{c(n)})$$

$$c(n) = 1, 3, 5, 7, 9, 11, 13, \dots$$

1, 1, 0, 1, 1, 1, 1, 1, 2, 2, 2, 2, 3, 3, 3, 4, 5, 5, 5, 6, 7, 8, 8, 9, 11, 12, 12, 14, 16, 17, 18, 20, 23, 25, 26, 29, 33, 35, 37, 41, 46, 49, 52, 57, 63, 68, 72, 78, 87, 93, 98, 107, 117, 125, 133, 144

### Degree n even permutations of order dividing 2

Réf. CJM 7 168 55.

HIS2 A0704 équations différentielles Formule de B. Salvy

HIS1 N1427 exponentielle

$$\exp(z) \cosh\left(\frac{z}{2}\right)^2$$

1, 1, 1, 1, 4, 16, 46, 106, 316, 1324, 5356, 18316, 63856, 272416, 1264264, 5409496, 22302736, 101343376, 507711376, 2495918224, 11798364736, 58074029056

### Partitions of $n$ into parts of 2 kinds

Réf. RS4 90. RCI 199.

HIS2 A0710

Euler

HIS1 N0535

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 2, 2, 2, 1, 1, 1, 1, 1, 1, 1, 1, \dots$$

1, 2, 5, 10, 20, 35, 62, 102, 167, 262, 407, 614, 919, 1345, 1952, 2788, 3950, 5524, 7671, 10540, 14388, 19470, 26190, 34968, 46439, 61275, 80455, 105047, 136541

### Partitions of $n$ into parts of 3 kinds

Réf. RS4 122.

HIS2 A0711

Euler

HIS1 N1122

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 3, 3, 3, 3, 2, 2, 2, 2, 2, 2, 2, 2, \dots$$

1, 3, 9, 22, 51, 107, 217, 416, 775, 1393, 2446, 4185, 7028, 11569, 18749, 29908, 47083, 73157, 112396, 170783, 256972, 383003, 565961, 829410, 1206282, 1741592



### Partitions of $n$ into parts of 2 kinds

Réf. RS4 90. RCI 199.

HIS2 A0712

Euler

HIS1 N0536

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 2, 2, 2, 2, 2, 2, 2, \dots$$

1, 2, 5, 10, 20, 36, 65, 110, 185, 300, 481, 752, 1165, 1770, 2665, 3956, 5822, 8470, 12230, 17490, 24842, 35002, 49010, 68150, 94235, 129512, 177087, 240840

### Partitions of $n$ into parts of 3 kinds

Réf. RS4 122.

HIS2 A0713

Euler

différences de A0712

HIS1 N1096

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 3, 2, 2, 2, 2, 2, 2, 2, \dots$$

1, 3, 8, 18, 38, 74, 139, 249, 434, 734, 1215, 1967, 3132, 4902, 7567, 11523, 17345, 25815, 38045, 55535, 80377, 115379, 164389, 232539, 326774, 456286, 633373

### Partitions of $n$ into parts of 3 kinds

Réf. RS4 122.

HIS2 A0714

Euler

HIS1 N1117

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 3, 3, 2, 2, 2, 2, 2, 2, 2, 2, \dots$$

1, 3, 9, 21, 47, 95, 186, 344, 620, 1078, 1835, 3045, 4967, 7947, 12534, 19470, 29879, 45285, 67924, 100820, 148301, 216199, 312690, 448738, 639464, 905024

### Partitions of $n$ into parts of 3 kinds

Réf. RS4 122.

HIS2 A0715

Euler

HIS1 N1121

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 3, 3, 3, 2, 2, 2, 2, 2, 2, 2, \dots$$

1, 3, 9, 22, 50, 104, 208, 394, 724, 1286, 2229, 3769, 6253, 10176, 16303, 25723, 40055, 61588, 93647, 140875, 209889, 309846, 453565, 658627, 949310, 1358589

### Partitions of $n$ into parts of 3 kinds

Réf. RS4 122.

HIS2 A0716

Euler

HIS1 N1123

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 3, 3, 3, 3, \dots$$

1, 3, 9, 22, 51, 108, 221, 429, 810, 1479, 2640, 4599, 7868, 13209, 21843, 35581, 57222, 90882, 142769, 221910, 341649, 521196, 788460, 1183221, 1762462, 2606604

### Partitions of $n$ into parts prime to 3

Réf. PSPM 8 145 65.

HIS2 A0726

Euler

HIS1 NO116

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1 \text{ si } n = 1 \text{ ou } 2 \text{ mod } 3.$$

1, 1, 2, 2, 4, 5, 7, 9, 13, 16, 22, 27, 36, 44, 57, 70, 89, 108, 135, 163, 202, 243, 297, 355, 431, 513, 617, 731, 874, 1031, 1225, 1439, 1701, 1991, 2341, 2731, 3197, 3717

Réf. KNAW 59 207 56.

**HIS2** A0727 Recouplements

**HIS1** N1296 Produit infini

La suite est alternée

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = -4, -4, -4, -4, \dots$$

1, 4, 2, 8, 5, 4, 10, 8, 9, 0, 14, 16, 10, 4, 0, 8, 14, 20, 2, 0, 11, 20, 32, 16, 0, 4, 14, 8, 9, 20, 26, 0, 2, 28, 0, 16, 16, 28, 22, 0, 14, 16, 0, 40, 0, 28, 26, 32, 17, 0, 32, 16, 22, 0, 10

Réf. KNAW 59 207 56.

**HIS2** A0729 Recouplements

La suite est alternée

**HIS1** N1691 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = -6, -6, -6, -6, -6, \dots$$

1, 6, 9, 10, 30, 0, 11, 42, 0, 70, 18, 54, 49, 90, 0, 22, 60, 0, 110, 0, 81, 180, 78, 0, 130, 198, 0, 182, 30, 90, 121, 84, 0, 0, 210, 0, 252, 102, 270, 170, 0, 0, 69, 330, 0, 38

Réf. QJM 38 56 07. KNAW 59 207 56. GMJ 8 29 67.

**HIS2** A0735 Euler Inverse de A5758 alternée en signe

**HIS1** N2069 Produit infini

La suite est alternée

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = -12, -12, -12, -12, \dots$$

1, 12, 54, 88, 99, 540, 418, 648, 594, 836, 1056, 4104, 209, 4104, 594, 4256, 6480, 4752, 298, 5016, 17226, 12100, 5346, 1296, 9063, 7128, 19494, 29160, 10032, 7668

Réf. PLMS 31 341 30. SPS 37-40-4 209 66.

**HIS2** A0757 équations différentielles Formule de B. Salvy

**HIS1** N1915 exponentielle f.g. exponentielle

$$a(n) = 2n a(n-2) + n a(n-3) + (n-1) a(n-1)$$

$$(- \ln(-z + 1) + 1) \exp(-z)$$

0, 0, 1, 1, 8, 36, 229, 1625, 13208, 120288, 1214673, 13469897, 162744944, 2128047988, 29943053061, 451123462673, 7245940789072, 123604151490592, 2231697509543361

### Stirling numbers of second kind

Réf. AS1 835. DKB 223.

**HIS2** A0770      Approximants de Padé

**HIS1** N2215      Fraction rationnelle

$$1$$


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$$(1 - z) (1 - 2 z) (1 - 3 z) (1 - 4 z) (1 - 5 z) (1 - 6 z)$$

1, 21, 266, 2646, 22827, 179487, 1323652, 9321312, 63436373, 420693273,  
2734926558, 17505749898, 110687251039, 693081601779, 4306078895384

### Stirling numbers of second kind

Réf. AS1 835. DKB 223.

**HIS2** A0771      Approximants de Padé

**HIS1** N2263      Fraction rationnelle

$$1$$


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$$(1 - z)(1 - 2 z)(1 - 3 z)(1 - 4 z)(1 - 5 z)(1 - 6 z)(1 - 7 z)$$

1, 28, 462, 5880, 63987, 627396, 5715424, 49329280, 408741333,  
3281882604, 25708104786, 197462483400, 1492924634839,  
11143554045652

Réf. CMB 8 627 65. JRM 4 168 71. FQ 27 16 89.

HIS2 A0792 Approximants de Padé

HIS1 N0205 Fraction rationnelle

$$\frac{1 + 2z + 3z^2 + z^3}{1 - 3z^3}$$

1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 81, 108, 162, 243, 324, 486, 729, 972, 1458, 2187, 2916, 4374, 6561, 8748, 13122, 19683, 26244, 39366, 59049, 78732, 118098

Réf. CMB 7 262 64. JCT 7 315 69.

HIS2 A0803 Approximants de Padé

HIS1 N2232 Fraction rationnelle

$$\frac{24 - 4z - 8z^2 - 16z^3}{1 - 2z + z^4}$$

24, 44, 80, 144, 264, 484, 888, 1632, 3000, 5516, 10144, 18656, 34312, 63108, 116072, 213488, 392664, 722220, 1328368, 2443248, 4493832, 8265444

**Réf.** CJM 8 308 56.

**HIS2** A0806 équations différentielles Suite P-récurrente

**HIS1** N1651 exponentielle (algébrique) Formule de B. Salvy

$$a(n) = (2n + 1) a(n - 1) + a(n - 2)$$

$$- \frac{-4 + 3(1 - 2z)^{1/2} + 2z}{\exp(1 - (1 - 2z)^{1/2}) (1 - 2z)^{5/2}}$$

0, 1, 5, 36, 329, 3655, 47844, 721315, 12310199, 234615096, 4939227215,  
113836841041, 2850860253240, 77087063678521, 2238375706930349

**Réf.** LU91 1 221.

**HIS2** A0898 Dérivée logarithmique Suite P-récurrente

**HIS1** N0645 exponentielle

$$a(n) = 2 a(n - 1) + (2n - 4) a(n - 2)$$

$$\exp(2z + z^2)$$

1, 2, 6, 20, 76, 312, 1384, 6512, 32400, 168992, 921184, 5222208, 30710464,  
186753920, 1171979904, 7573069568, 50305536256, 342949298688,  
2396286830080



### Symmetric permutations

Réf. LU91 1 222. LNM 560 201 76.

**HIS2** A0902                      Recouplements                      Suite P-récurrente

**HIS1** N1147                      exponentielle

$$a(n) = 2 a(n-1) - (4-2n) a(n-2)$$

$$1/2 \exp(z (2 + z)) + 1/2$$

1, 3, 10, 38, 156, 692, 3256, 16200

### Ménage numbers

Réf. LU91 1 495.

**HIS2** A0904                      P-réurrences                      Suite P-récurrente

**HIS1** N1193

$$a(n) = a(n - 3) + (n + 3) a(n - 2) + (n + 2) a(n - 1)$$

0, 3, 13, 83, 592, 4821, 43979, 444613, 4934720, 59661255, 780531033,  
10987095719, 165586966816, 2660378564777, 45392022568023,  
819716784789193

Réf. TOH 37 259 33. JO39 152. DB1 296. C1 256.

**HIS2** A0906            Hypergéométrique            Suite P-récurrente

**HIS1** N0841            algébrique            f.g. exponentielle

$$(n - 1) a(n) = (2n + 1) n a(n - 1)$$

$$\frac{z}{(1 - 2z)^{5/2}}$$

2, 20, 210, 2520, 34650, 540540, 9459450, 183783600, 3928374450,  
91662070500, 2319050383650, 63246828645000, 1849969737866250

### Associated Stirling numbers

Réf. TOH 37 259 33. JO39 152. C1 256.

**HIS2** A0907            Hypergéométrique            Suite P-récurrente

**HIS1** N1797            algébrique            f.g. exponentielle

$$1/4 a(n) (4n + 1) (n - 1) = 1/4 a(n - 1) (4n + 5) (2n + 1) (n + 1)$$

$$\frac{z (2z^2 + 33z + 18)}{3 (1 - 2z)^{9/2}}$$

6, 130, 2380, 44100, 866250, 18288270, 416215800, 10199989800,  
268438920750, 7562120816250, 227266937597700, 7262844156067500

**Stirling numbers of first kind**

Réf. AS1 833. DKB 226.

**HIS2** A0914 Approximants de Padé**HIS1** N0789 Fraction rationnelle

$$\frac{2 - z}{(1 - z)^5}$$

2, 11, 35, 85, 175, 322, 546, 870, 1320, 1925, 2717, 3731, 5005, 6580, 8500, 10812, 13566, 16815, 20615, 25025, 30107, 35926, 42550, 50050, 58500, 67977, 78561

**Stirling numbers of first kind**

Réf. AS1 833. DKB 226.

**HIS2** A0915 Dérivée logarithmique**HIS1** N2239 Fraction rationnelle

$$\frac{z^3 + 22z^2 + 58z + 24}{(z - 1)^9}$$

24, 274, 1624, 6769, 22449, 63273, 157773, 357423, 749463, 1474473, 2749747, 4899622, 8394022, 13896582, 22323822, 34916946, 53327946, 79721796

$2^{n-2}$ 

Réf. VO11 31. DA63 2 212. R1 33.

**HIS2** A0918      Approximants de Padé

**HIS1** N0625      Fraction rationnelle

$$z$$


---


$$(1 - 2z)(1 - z)$$

0, 2, 6, 14, 30, 62, 126, 254, 510, 1022, 2046, 4094, 8190, 16382, 32766,  
65534, 131070, 262142, 524286, 1048574, 2097150, 4194302, 8388606,  
16777214, 33554430

## Differences of 0

Réf. VO11 31. DA63 2 212. R1 33.

**HIS2** A0919      Approximants de Padé

**HIS1** N2235      Fraction rationnelle

$$24$$


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$$(1 - z)(1 - 2z)(1 - 3z)(1 - 4z)$$

24, 240, 1560, 8400, 40824, 186480, 818520, 3498000, 14676024, 60780720,  
249401880, 1016542800, 4123173624, 16664094960, 67171367640

**Differences of 0**

**Réf.** VO11 31. DA63 2 212. R1 33.

**HIS2** A0920 Recoupements

**HIS1** N2370 Fraction rationnelle

720

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$(1 - z)(1 - 2z)(1 - 3z)(1 - 4z)(1 - 5z)(1 - 6z)$

720, 15120, 191520, 1905120, 16435440, 129230640, 953029440,  
6711344640, 45674188560, 302899156560, 1969147121760,  
12604139926560

**Réf.** LA62 13. FQ 2 225 64. JA66 91. MMAG 41 15 68.

**HIS2** A0930 Approximants de Padé

**HIS1** N0207 Fraction rationnelle

1

---

3

$1 - z - z$

1, 1, 1, 2, 3, 4, 6, 9, 13, 19, 28, 41, 60, 88, 129, 189, 277, 406, 595, 872, 1278,  
1873, 2745, 4023, 5896, 8641, 12664, 18560, 27201, 39865, 58425, 85626,  
125491, 183916

Réf. JA66 90. MMAG 41 17 68.

HIS2 A0931 Approximants de Padé

HIS1 N0102 Fraction rationnelle

$$\frac{1 + z}{1 - z - z^2}$$

1, 1, 1, 2, 2, 3, 4, 5, 7, 9, 12, 16, 21, 28, 37, 49, 65, 86, 114, 151, 200, 265, 351, 465, 616, 816, 1081, 1432, 1897, 2513, 3329, 4410, 5842, 7739, 10252, 13581, 17991, 23833

### Genus of complete graph on n nodes

Réf. PNAS 60 438 68.

HIS2 A0933 Approximants de Padé conjecture

HIS1 N0182 Fraction rationnelle

$$\frac{z^4 (1 - z + z^2 - z^3 + z^4)}{(z^2 + z + 1) (1 + z^2) (1 - z)^3}$$

0, 0, 0, 0, 1, 1, 1, 2, 3, 4, 5, 6, 8, 10, 11, 13, 16, 18, 20, 23, 26, 29, 32, 35, 39, 43, 46, 50, 55, 59, 63, 68, 73, 78, 83, 88, 94, 100, 105, 111, 118, 124, 130, 137, 144, 151, 158, 165, 173, 181

### Fine's sequence: relations of valence 1 on an n-set

Réf. IC 16 352 70. JCT A23 90 77. DM 19 101 77.

**HIS2** A0957 LLL Suite P-récurrente

**HIS1** N0635 algébrique

$$(n + 2) a(n) = (7/2 n + 1) a(n - 1) + (2 n + 1) a(n - 2)$$

$$\frac{1}{2} \frac{1 - 2z - 2z^2 - (1 - 4z)^{1/2}}{2z^3 + z^4}$$

1, 2, 6, 18, 57, 186, 622, 2120, 7338, 25724, 91144, 325878, 1174281, 4260282, 15548694, 57048048, 210295326, 778483932, 2892818244, 10786724388

### A simple recurrence

Réf. IC 16 351 70.

**HIS2** A0958 LLL Suite P-récurrente

**HIS1** N1104 algébrique

$$\frac{1 - z - 4z^2 - 2z^3 - (- (4z - 1) (z + 1) )^{2 1/2}}{2 ( 2z^3 + z^4 )}$$

1, 3, 8, 24, 75, 243, 808, 2742, 9458, 33062, 116868, 417022, 1500159, 5434563, 19808976, 72596742, 267343374, 988779258, 3671302176, 13679542632

### A ternary continued fraction

Réf. TOH 37 441 33.

**HIS2** A0962      Approximants de Padé

**HIS1** N0582      Fraction rationnelle

$$(1 + z) \left( 2z^4 - 7z^3 + 6z^2 + z - 1 \right)$$

---


$$\frac{z^6 - 3z^4 + 7z^2 - 1}{z^6 - 3z^4 + 7z^2 - 1}$$

1, 0, 0, 1, 2, 5, 15, 32, 99, 210, 650, 1379, 4268, 9055, 28025, 59458, 184021, 390420, 1208340, 2563621, 7934342, 16833545, 52099395, 110534372, 342101079, 725803590

### A ternary continued fraction

Réf. TOH 37 441 33.

**HIS2** A0963      Approximants de Padé

**HIS1** N1062      Fraction rationnelle

$$1 - 4z^2 + 7z^3 - 2z^4$$

---


$$\frac{1 - 7z^2 + 3z^4 - z^6}{1 - 7z^2 + 3z^4 - z^6}$$

0, 1, 0, 3, 7, 16, 49, 104, 322, 683, 2114, 4485, 13881, 29450, 91147, 193378, 598500, 1269781, 3929940, 8337783, 25805227, 54748516, 169445269, 359496044, 1112631142



**$n!$  never ends in this many 0's**

Réf. MMAG 27 55 53.

**HIS2** A0966 Approximants de Padé**HIS1** N1557 Fraction rationnelle

$$\frac{5 + 6z + 6z^2 + 6z^3 + 6z^4 + z^5 + z^6}{1 - z - z^6 + z^7}$$

5, 11, 17, 23, 29, 30, 36, 42, 48, 54, 60, 61, 67, 73, 79, 85, 91, 92, 98, 104, 110, 116, 122, 123, 129, 135, 141, 147, 153, 154, 155

**Fermat coefficients**

Réf. MMAG 27 141 54.

**HIS2** A0969 Approximants de Padé**HIS1** N1042 Fraction rationnelle

$$\frac{1 + z + 2z^2}{(z^2 + z + 1)(1 - z)^3}$$

1, 3, 7, 12, 18, 26, 35, 45, 57, 70, 84, 100, 117, 135, 155, 176, 198, 222, 247, 273, 301, 330, 360, 392, 425, 459, 495, 532, 570, 610, 651, 693, 737, 782, 828, 876, 925, 975

### Fermat coefficients

Réf. MMAG 27 141 54.

**HIS2** A0970 Approximants de Padé

**HIS1** N1846 Fraction rationnelle

$$\frac{3z^5 + 2z^4 + 4z^3 + 3z^2 + 3z + 1}{(z^4 + z^3 + z^2 + z + 1)(1 - z)^5}$$

1, 7, 25, 66, 143, 273, 476, 775, 1197, 1771, 2530, 3510, 4750, 6293, 8184, 10472, 13209, 16450, 20254, 24682, 29799, 35673, 42375, 49980, 58565, 68211, 79002

### Fermat coefficients

Réf. MMAG 27 141 54.

**HIS2** A0973 Approximants de Padé

**HIS1** N2137 Fraction rationnelle

$$\frac{(z + 1)(z^2 + 6z + 1)}{(z - 1)^8}$$

1, 15, 99, 429, 1430, 3978, 9690, 21318, 43263, 82225, 148005, 254475, 420732, 672452, 1043460, 1577532, 2330445, 3372291, 4790071, 6690585, 9203634

### Central binomial coefficients

Réf. RS3. AS1 828.

**HIS2** A0984      Hypergéométrique      Suite P-récurrente

**HIS1** N0643      algébrique

${}_2F_1\left(\left[\frac{1}{2}\right], \left[\right], 4z\right)$

$$\frac{1}{(1 - 4z)^{1/2}}$$

1, 2, 6, 20, 70, 252, 924, 3432, 12870, 48620, 184756, 705432, 2704156, 10400600, 40116600, 155117520, 601080390, 2333606220, 9075135300, 35345263800

### Stochastic matrices of integers

Réf. DMJ 35 659 68.

**HIS2** A0985      Dérivée logarithmique      Suite P-récurrente

**HIS1** N1168      exponentielle

$a(n) = \left(\frac{1}{2}n^3 - \frac{9}{2}n^2 + 13n - 12\right)a(n-4) + (2n-3)a(n-1) + (-n^2 + 5n - 6)a(n-2) + (-n^2 + 5n - 6)a(n-3)$

$$\frac{\exp\left(z\left(z^3 + z^2 - 2\right)\right)}{(1-z)^{1/2}}$$

1, 1, 3, 11, 56, 348, 2578, 22054, 213798, 2313638, 27627434, 360646314, 5107177312, 77954299144, 1275489929604, 22265845018412, 412989204564572

### Stochastic matrices of integers

Réf. DMJ 35 659 68.

**HIS2** A0986 Dérivée logarithmique Suite P-récurrente

**HIS1** N1437 exponentielle (algébrique)

$$a(n) = 2(2n-1)n^2 a(n-1) - \frac{1}{2}(2n-1)(12n^2 - 7n + 1)a(n-4) - \frac{1}{2}(2n-1)(-8n^2 + 2n)a(n-2)$$

$$\frac{\exp\left(\frac{z^3 + 3z^2 - 4z + 2}{4(1-z)}\right)}{(z-1)^{1/2}}$$

1, 0, 1, 4, 18, 112, 820, 6912, 66178, 708256, 8372754, 108306280,  
1521077404, 23041655136, 374385141832, 6493515450688,  
119724090206940

### Stochastic matrices of integers

Réf. DMJ 35 659 68.

**HIS2** A0987 Dérivée logarithmique Suite P-récurrente

**HIS1** N0707 exponentielle (algébrique)

$$\frac{\exp\left(z\left(\frac{z^3 + z^2 - 2}{4(1-z)}\right)\right)}{(1-z)^{3/2}}$$

0, 1, 1, 2, 7, 32, 184, 1268, 10186, 93356, 960646, 10959452, 137221954,  
1870087808, 27548231008, 436081302248, 7380628161076,  
132975267434552

**2-line partitions of n**

Réf. DMJ 31 272 64.

HIS2 A0990

Euler

HIS1 N0978

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, 2, 2, 2, 2, \dots$$

1, 3, 5, 10, 16, 29, 45, 75, 115, 181, 271, 413, 605, 895, 1291, 1866, 2648,  
3760, 5260, 7352, 10160, 14008, 19140, 26085, 35277, 47575, 63753, 85175,  
113175, 149938

**3-line partitions of n**

Réf. DMJ 31 272 64.

HIS2 A0991

Euler

HIS1 N1011

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, 2, 3, 3, 3, 3, 3, 3, \dots$$

1, 3, 6, 12, 21, 40, 67, 117, 193, 319, 510, 818, 1274, 1983, 3032, 4610, 6915,  
10324, 15235, 22371, 32554, 47119, 67689, 96763, 137404, 194211, 272939,  
381872

### Dissections of a polygon

**Réf.** EMN 32 6 40. BAMS 54 359 48.

**HIS2** A1002 Inverse fonctionnel Suite P-récurrente.

**HIS1** N1146 algébrique

$$(n - 1) n a(n) = (22/5 n^2 - 11 n + 33/5) a(n - 1) + (27/5 n^2 - 108/5 n + 21) a(n - 2)$$

$$\text{Inverse de } z(1 - z - z^2)$$

1, 1, 3, 10, 38, 154, 654, 2871, 12925, 59345, 276835, 1308320, 6250832,  
30142360, 146510216, 717061938, 3530808798, 17478955570,  
86941210950, 434299921440

### Super Catalan numbers

**Réf.** EMN 32 6 40. BAMS 54 359 48. RCI 168. C1 57. VA91 198.

**HIS2** A1003 Inverse fonctionnel Suite P-récurrente

**HIS1** N1163 algébrique

$$n a(n) = (6 n - 9) a(n - 1) + (- n + 3) a(n - 2)$$

$$\frac{1 + z - (1 - 6z + z^2)^{1/2}}{4z}$$

1, 1, 3, 11, 45, 197, 903, 4279, 20793, 103049, 518859, 2646723, 13648869,  
71039373, 372693519, 1968801519, 10463578353, 55909013009,  
300159426963

### Partitions of points on a circle

Réf. BAMS 54 359 48.

**HIS2** A1005 Inverse fonctionnel Suite P-récurrente  
**HIS1** N0520 algébrique algébrique du 3<sup>è</sup> degré

$$\begin{aligned} & \frac{1}{2} (2n + 1) n a(n) = (193/4 n^2 - 1015/4 n + 327) a(n - 3) \\ & + (-37/4 n^2 + 91/4 n - 9) a(n - 1) + (9/4 n^2 - 9/4 n - 3) a(n - 2) \\ & + (279/4 n^2 - 1953/4 n + 837) a(n - 4) \end{aligned}$$

1, 0, 1, 1, 2, 5, 8, 21, 42, 96, 222, 495, 1177, 2717, 6435, 15288, 36374,  
 87516, 210494, 509694, 1237736, 3014882, 7370860, 18059899, 44379535,  
 109298070, 269766655

### Motzkin numbers

Réf. BAMS 54 359 48. JSIAM 18 254 69. JCT A23 292 77.

**HIS2** A1006 LLL Suite P-récurrente  
**HIS1** N0456 algébrique

$$(n + 1) a(n) = (2n - 1) a(n - 1) + (3n - 6) a(n - 2)$$

$$\frac{1 - z - (1 - 2z - 3z^2)^{1/2}}{2z^2}$$

1, 1, 2, 4, 9, 21, 51, 127, 323, 835, 2188, 5798, 15511, 41835, 113634,  
 310572, 853467, 2356779, 6536382, 18199284, 50852019, 142547559,  
 400763223, 1129760415

**6th powers**

Réf. BA9.

**HIS2** A1014 Approximants de Padé**HIS1** N2318 Fraction rationnelle

$$(1 + z) (z^4 + 56z^3 + 246z^2 + 56z + 1)$$

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$$(1 - z)^7$$

1, 64, 729, 4096, 15625, 46656, 117649, 262144, 531441, 1000000, 1771561,  
 2985984, 4826809, 7529536, 11390625, 16777216, 24137569, 34012224,  
 47045881

**Seventh powers**

Réf. BA9.

**HIS2** A1015 Approximants de Padé**HIS1** N2341 Fraction rationnelle

$$z^6 + 120z^5 + 1191z^4 + 2416z^3 + 1191z^2 + 120z + 1$$

---


$$(z - 1)^8$$

1, 128, 2187, 16384, 78125, 279936, 823543, 2097152, 4782969, 10000000,  
 19487171, 35831808, 62748517, 105413504, 170859375, 268435456,  
 410338673



## Eighth powers

Réf. BA9.

**HIS2** A1016

Recouplements

**HIS1** N2357

Fraction rationnelle

$$\frac{(z + 1)^6 (z^2 + 246z + 4047z^2 + 11572z^3 + 4047z^4 + 246z^5 + 1)^2}{(z - 1)^9}$$

1, 256, 6561, 65536, 390625, 1679616, 5764801, 16777216, 43046721,  
100000000, 214358881, 429981696, 815730721, 1475789056, 2562890625,  
4294967296

## Powers of 8

Réf. BA9.

**HIS2** A1018

Approximants de Padé

**HIS1** N1937

Fraction rationnelle

$$\frac{1}{1 - 8z}$$

1, 8, 64, 512, 4096, 32768, 262144, 2097152, 16777216, 134217728,  
1073741824, 8589934592, 68719476736, 549755813888, 4398046511104,  
35184372088832

**Powers of 9**

Réf. BA9.

**HIS2** A1019      Approximants de Padé**HIS1** N1992      Fraction rationnelle

$$\frac{1}{1 - 9z}$$

1, 9, 81, 729, 6561, 59049, 531441, 4782969, 43046721, 387420489,  
 3486784401, 31381059609, 282429536481, 2541865828329,  
 22876792454961

**Powers of 11**

Réf. BA9.

**HIS2** A1020      Approximants de Padé**HIS1** N2054      Fraction rationnelle

$$\frac{1}{1 - 11z}$$

1, 11, 121, 1331, 14641, 161051, 1771561, 19487171, 214358881,  
 2357947691, 25937424601, 285311670611, 3138428376721,  
 34522712143931

**Powers of 12**

Réf. BA9.

**HIS2** A1021      Approximants de Padé**HIS1** N2084      Fraction rationnelle

$$\frac{1}{1 - 12z}$$

1, 12, 144, 1728, 20736, 248832, 2985984, 35831808, 429981696,  
 5159780352, 61917364224, 743008370688, 8916100448256,  
 106993205379072

**Powers of 13**

Réf. BA9.

**HIS2** A1022      Approximants de Padé**HIS1** N2107      Fraction rationnelle

$$\frac{1}{1 - 13z}$$

1, 13, 169, 2197, 28561, 371293, 4826809, 62748517, 815730721,  
 10604499373, 137858491849, 1792160394037, 23298085122481,  
 302875106592253

**Powers of 14**

Réf. BA9.

**HIS2** A1023      Approximants de Padé**HIS1** N2120      Fraction rationnelle

$$\frac{1}{1 - 14z}$$

1, 14, 196, 2744, 38416, 537824, 7529536, 105413504, 1475789056,  
 20661046784, 289254654976, 4049565169664, 56693912375296,  
 793714773254144

**Powers of 15**

Réf. BA9.

**HIS2** A1024      Approximants de Padé**HIS1** N2147      Fraction rationnelle

$$\frac{1}{1 - 15z}$$

1, 15, 225, 3375, 50625, 759375, 11390625, 170859375, 2562890625,  
 38443359375, 576650390625, 8649755859375, 129746337890625,  
 1946195068359375

**Powers of 16**

Réf. BA9.

**HIS2** A1025      Approximants de Padé**HIS1** N2164      Fraction rationnelle

$$\frac{1}{1 - 16z}$$

1, 16, 256, 4096, 65536, 1048576, 16777216, 268435456, 4294967296,  
68719476736, 1099511627776, 17592186044416, 281474976710656

**Powers of 17**

Réf. BA9.

**HIS2** A1026      Approximants de Padé**HIS1** N2182      Fraction rationnelle

$$\frac{1}{1 - 17z}$$

1, 17, 289, 4913, 83521, 1419857, 24137569, 410338673, 6975757441,  
118587876497, 2015993900449, 34271896307633, 582622237229761

**Powers of 18**

Réf. BA9.

**HIS2** A1027 Approximants de Padé**HIS1** N2192 Fraction rationnelle
$$1$$


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$$1 - 18z$$

1, 18, 324, 5832, 104976, 1889568, 34012224, 612220032, 11019960576,  
198359290368, 3570467226624, 64268410079232, 1156831381426176

**Powers of 19**

Réf. BA9.

**HIS2** A1029 Approximants de Padé**HIS1** N2198 Fraction rationnelle
$$1$$


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$$1 - 19z$$

1, 19, 361, 6859, 130321, 2476099, 47045881, 893871739, 16983563041,  
322687697779, 6131066257801, 116490258898219, 2213314919066161

**Réf.** RCI 217.

**HIS2** A1044

Hypergéométrique

Suite P-récurrente

**HIS1** N1492

Fraction rationnelle

double exponentielle

$$a(n) = (n+1)^2$$

$$\frac{z}{1 - z}$$

1, 4, 36, 576, 14400, 518400, 25401600, 1625702400, 131681894400,  
13168189440000, 1593350922240000, 229442532802560000,  
38775788043632640000

**Réf.** FQ 10 499 72. JCT A26 149 79.

**HIS2** A1045

Approximants de Padé

**HIS1** N0983

Fraction rationnelle

$$\frac{1}{(1 + z)(1 - 2z)}$$

1, 1, 3, 5, 11, 21, 43, 85, 171, 341, 683, 1365, 2731, 5461, 10923, 21845,  
43691, 87381, 174763, 349525, 699051, 1398101, 2796203, 5592405,  
11184811, 22369621

**Réf.** EUR 24 20 61. CR 268 579 69.

**HIS2** A1047      Approximants de Padé

**HIS1** N1596      Fraction rationnelle

$$1$$


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$$(1 - 3z)(1 - 2z)$$

1, 5, 19, 65, 211, 665, 2059, 6305, 19171, 58025, 175099, 527345, 1586131,  
4766585, 14316139, 42981185, 129009091, 387158345, 1161737179,  
3485735825

**Réf.** CJM 22 26 70.

**HIS2** A1048      Dérivée logarithmique      Suite P-récurrente

**HIS1** N0337      Fraction rationnelle      f.g. exponentielle

${}_3F_2([1, 1, 3], [2, 2], z)$

$$2 - z$$


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$$(1 - z)^2$$

2, 3, 8, 30, 144, 840, 5760, 45360, 403200, 3991680, 43545600, 518918400,  
6706022400, 93405312000, 1394852659200, 22230464256000,  
376610217984000



**Réf.** FQ 3 129 65. BR72 52.

**HIS2** A1060      Approximants de Padé

**HIS1** N0512      Fraction rationnelle

$$\frac{2 + 3z}{1 - z - z^2}$$

2, 5, 7, 12, 19, 31, 50, 81, 131, 212, 343, 555, 898, 1453, 2351, 3804, 6155, 9959, 16114, 26073, 42187, 68260, 110447, 178707, 289154, 467861, 757015, 1224876

**Réf.** NCM 4 167 1878. MMAG 40 78 67. FQ 7 239 69.

**HIS2** A1075      Approximants de Padé

**HIS1** N0700      Fraction rationnelle

$$\frac{1 - 2z}{1 - 4z + z^2}$$

1, 2, 7, 26, 97, 362, 1351, 5042, 18817, 70226, 262087, 978122, 3650401, 13623482, 50843527, 189750626, 708158977, 2642885282, 9863382151, 36810643322

Réf. TH52 282.

**HIS2** A1076 Approximants de Padé

**HIS1** N1434 Fraction rationnelle

$$\frac{1}{1 - 4z - z^2}$$

1, 4, 17, 72, 305, 1292, 5473, 23184, 98209, 416020, 1762289, 7465176,  
31622993, 133957148, 567451585, 2403763488, 10182505537, 43133785636

Réf. TH52 282.

**HIS2** A1077 Approximants de Padé

**HIS1** N0764 Fraction rationnelle

$$\frac{1 - 2z}{1 - 4z - z^2}$$

1, 2, 9, 38, 161, 682, 2889, 12238, 51841, 219602, 930249, 3940598,  
16692641, 70711162, 299537289, 1268860318, 5374978561, 22768774562,  
96450076809

Réf. TH52 281.

HIS2 A1078 Approximants de Padé

HIS1 N0839 Fraction rationnelle

$$\frac{2z}{1 - 10z + z^2}$$

0, 2, 20, 198, 1960, 19402, 192060, 1901198, 18819920, 186298002,  
1844160100, 18255302998, 180708869880, 1788833395802,  
17707625088140

Réf. EUL (1) 1 374 11. TH52 281.

HIS2 A1079 Approximants de Padé

HIS1 N1659 Fraction rationnelle

$$\frac{1 - 5z}{1 - 10z + z^2}$$

1, 5, 49, 485, 4801, 47525, 470449, 4656965, 46099201, 456335045,  
4517251249, 44716177445, 442644523201, 4381729054565,  
43374646022449

**Réf.** NCM 4 167 1878. TH52 281.

**HIS2** A1080      Approximants de Padé

**HIS1** N1278      Fraction rationnelle

$$\frac{3z}{1 - 16z + z^2}$$

0, 3, 48, 765, 12192, 194307, 3096720, 49353213, 786554688, 12535521795,  
199781794032, 3183973182717, 50743789129440, 808716652888323

**Réf.** NCM 4 167 1878. TH52 281.

**HIS2** A1081      Approximants de Padé

**HIS1** N1949      Fraction rationnelle

$$\frac{1 - 8z}{1 - 16z + z^2}$$

1, 8, 127, 2024, 32257, 514088, 8193151, 130576328, 2081028097,  
33165873224, 528572943487, 8424001222568, 134255446617601,  
2139663144659048

**Réf.** NCM 4 167 1878. MTS 65(4, Supplement) 8 56.

**HIS2** A1084      Approximants de Padé

**HIS1** N1284      Fraction rationnelle

$$\frac{3z}{1 - 20z + z^2}$$

0, 3, 60, 1197, 23880, 476403, 9504180, 189607197, 3782639760,  
75463188003, 1505481120300, 30034159217997, 599177703239640,  
11953519905574803

**Réf.** NCM 4 167 1878. MTS 65(4, Supplement) 8 56.

**HIS2** A1085      Approximants de Padé

**HIS1** N2030      Fraction rationnelle

$$\frac{1 - 10z}{1 - 20z + z^2}$$

1, 10, 199, 3970, 79201, 1580050, 31521799, 628855930, 12545596801,  
250283080090, 4993116004999, 99612037019890, 1987247624392801

Réf. NCM 4 167 1878.

**HIS2** A1090      Approximants de Padé

**HIS1** N1936      Fraction rationnelle

$$\frac{1}{1 - 8z + z^2}$$

1, 8, 63, 496, 3905, 30744, 242047, 1905632, 15003009, 118118440,  
929944511, 7321437648, 57641556673, 453811015736, 3572846569215,  
28128961537984

Réf. NCM 4 167 1878.

**HIS2** A1091      Approximants de Padé

**HIS1** N1479      Fraction rationnelle

$$\frac{1 - 4z}{1 - 8z + z^2}$$

1, 4, 31, 244, 1921, 15124, 119071, 937444, 7380481, 58106404, 457470751,  
3601659604, 28355806081, 223244789044, 1757602506271,  
13837575261124

### Enneagonal numbers

Réf. B1 189.

HIS2 A1106 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 6z}{(1 - z)^3}$$

1, 9, 24, 46, 75, 111, 154, 204, 261, 325, 396, 474, 559, 651, 750, 856, 969, 1089, 1216, 1350, 1491, 1639, 1794, 1956, 2125, 2301, 2484, 2674, 2871, 3075, 3286, 3504, 3729, 3961, 4200

### Decagonal numbers

Réf. B1 189.

HIS2 A1107 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 7z}{(1 - z)^3}$$

1, 10, 27, 52, 85, 126, 175, 232, 297, 370, 451, 540, 637, 742, 855, 976, 1105, 1242, 1387, 1540, 1701, 1870, 2047, 2232, 2425, 2626, 2835, 3052, 3277, 3510, 3751, 4000, 4257, 4522

**$n(n+1)/2$  is square****Réf.** D1 2 10. MAG 47 237 63. B1 193. FQ 9 95 71.**HIS2** A1108      Approximants de Padé**HIS1** N1924      Fraction rationnelle

$$\frac{1 + z}{(z - 1)^2 (z^2 - 6z + 1)}$$

1, 8, 49, 288, 1681, 9800, 57121, 332928, 1940449, 11309768, 65918161,  
 384199200, 2239277041, 13051463048, 76069501249, 443365544448,  
 2584123765441

**Réf.** D1 2 10. MAG 47 237 63. B1 193. FQ 9 95 71.**HIS2** A1109      Approximants de Padé**HIS1** N1760      Fraction rationnelle

$$\frac{1}{1 - 6z + z^2}$$

1, 6, 35, 204, 1189, 6930, 40391, 235416, 1372105, 7997214, 46611179,  
 271669860, 1583407981, 9228778026, 53789260175, 313506783024,  
 1827251437969



**Both triangular and square**

**Réf.** D1 2 10. MAG 47 237 63. B1 193. FQ 9 95 71.

**HIS2** A1110      Approximants de Padé

**HIS1** N2291      Fraction rationnelle

$$\frac{1 + z}{(1 - z)^2 (z^2 - 3z + 1)}$$

1, 36, 1225, 41616, 1413721, 48024900, 1631432881, 55420693056,  
1882672131025, 63955431761796, 2172602007770041, 73804512832419600

**Differences of 0**

**Réf.** VO11 31. DA63 2 212. R1 33.

**HIS2** A1117      Approximants de Padé

**HIS1** N1763      Fraction rationnelle

$$\frac{6}{(1 - z)(1 - 2z)(1 - 3z)}$$

6, 36, 150, 540, 1806, 5796, 18150, 55980, 171006, 519156, 1569750,  
4733820, 14250606, 42850116, 128746950, 386634060, 1160688606,  
3483638676

**Differences of 0**

**Réf.** VO11 31. DA63 2 212. R1 33.

**HIS2** A1118 Approximants de Padé

**HIS1** N2334 Fraction rationnelle

120

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$(1 - z) (1 - 2 z) (1 - 3 z) (1 - 4 z) (1 - 5 z)$

120, 1800, 16800, 126000, 834120, 5103000, 29607600, 165528000,  
901020120, 4809004200, 25292030400, 131542866000, 678330198120,  
3474971465400

**Double factorials**

**Réf.** AMM 55 425 48. MOC 24 231 70.

**HIS2** A1147 Hypergéométrique Suite P-récurrente

**HIS1** N1217 exponentielle (algébrique)

Inverse fonctionnel de A1710

Inverse de A0698

2 z

---

$1 + (1 - 2 z)^{1/2}$

1, 1, 3, 15, 105, 945, 10395, 135135, 2027025, 34459425, 654729075,  
13749310575, 316234143225, 7905853580625, 213458046676875,  
6190283353629375

## Partitions of n into squares

Réf. BIT 19 298 79.

HIS2 A1156

Euler

HIS1 N0079

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^{c(n)})}$$

**c(n) = 1, 4, 9, 16, ..., les carrés parfaits.**

1, 1, 1, 1, 2, 2, 2, 2, 3, 4, 4, 4, 5, 6, 6, 6, 8, 9, 10, 10, 12, 13, 14, 14, 16, 19, 20, 21, 23, 26, 27, 28, 31, 34, 37, 38, 43, 46, 49, 50, 55, 60, 63, 66, 71, 78, 81, 84, 90, 98, 104, 107, 116

## Board-pile polyominoes with n cells

Réf. JCT 6 103 69. AB71 363. JSP 58 477 90.

HIS2 A1169

Approximants de Padé

HIS1 N0639

Fraction rationnelle

$$(1 - z)^3$$

---


$$1 - 5z + 7z^2 - 4z^3$$

1, 2, 6, 19, 61, 196, 629, 2017, 6466, 20727, 66441, 212980, 682721, 2188509, 7015418, 22488411, 72088165, 231083620, 740754589, 2374540265, 7611753682

### Baxter permutations of length $2n-1$

Réf. MAL 2 25 67. JCT A24 393 78. FQ 27 166 89.

**HIS2** A1181 P-réurrences Suite P-récurrente

**HIS1** N0652

$$(n + 3) (n + 2) a(n) = (7n^2 + 7n - 2) a(n - 1) + (8n^2 - 24n + 16) a(n - 2)$$

1, 2, 6, 22, 92, 422, 2074, 10754, 58202, 326240, 1882960, 11140560, 67329992, 414499438, 2593341586, 16458756586, 105791986682, 687782586844, 4517543071924

### Degree $n$ permutations of order exactly 2

Réf. CJM 7 159 55.

**HIS2** A1189 P-réurrences Suite P-récurrente

**HIS1** N1127 exponentielle

$$a(n) = 3 a(n - 1) + (n - 3) a(n - 2) + (-2n + 3) a(n - 3) + (n - 2) a(n - 4)$$

$$\exp(1/2 z (2 + z)) - \exp(z)$$

0, 1, 3, 9, 25, 75, 231, 763, 2619, 9495, 35695, 140151, 568503, 2390479, 10349535, 46206735, 211799311, 997313823, 4809701439, 23758664095, 119952692895

### Expansion of an integral

Réf. C1 167.

**HIS2** A1193            Hypergéométrique            Suite P-récurrente

**HIS1** N0770            exponentielle (algébrique)

$$(n - 1) a(n) = (2n - 3) n a(n - 1)$$

$$\frac{z}{(1 - 2z)^{1/2}}$$

1, 2, 9, 60, 525, 5670, 72765, 1081080, 18243225

### Expansion of an integral

Réf. C1 167.

**HIS2** A1194            Hypergéométrique            Suite P-récurrente.

**HIS1** N1139            exponentielle (algébrique)            double exponentielle

$$\frac{z(2 - 3z)}{(1 - 2z)^{3/2}}$$

3, 9, 54, 450, 4725, 59535, 873180, 14594580

### Clouds with n points

Réf. C1 276.

**HIS2** A1205 Dérivée logarithmique Suite P-récurrente.

**HIS1** N1181 exponentielle (algébrique)

$$2 a(n) = (n - 2) (n - 3) a(n - 3) + (2 n - 4) a(n - 1)$$

$$\exp(-1/4 z (z + 2))$$

---


$$(1 - z)^{1/2}$$

1, 0, 0, 1, 3, 12, 70, 465, 3507, 30016, 286884, 3026655, 34944085,  
438263364, 5933502822, 86248951243, 1339751921865, 22148051088480,  
388246725873208

### Packing a box with n dominoes

Réf. AMM 69 61 62.

**HIS2** A1224 Approximants de Padé

**HIS1** N0117 Fraction rationnelle

$$1 + z - 2z^2 - z^3 - z^4 - z^5$$

---


$$(z^4 + z^2 - 1) (z^2 + z - 1)$$

1, 2, 2, 4, 5, 9, 12, 21, 30, 51, 76, 127, 195, 322, 504, 826, 1309, 2135, 3410,  
5545, 8900, 14445, 23256, 37701, 60813, 98514, 159094, 257608, 416325,  
673933, 1089648

### Stirling numbers of first kind

Réf. AS1 833. DKB 226.

**HIS2** A1233 Tableaux généralisés Suite P-récurrente

**HIS1** N2216 exponentielle (log)

$$\frac{-\ln(1-z)^5}{120(1-z)}$$

1, 21, 322, 4536, 63273, 902055, 13339535, 206070150, 3336118786,  
56663366760, 1009672107080, 18861567058880, 369012649234384

### Stirling numbers of first kind

Réf. AS1 834. DKB 226.

**HIS2** A1234 Tableaux généralisés Suite P-récurrente

**HIS1** N2264 exponentielle (log)

$$\frac{\ln(1-z)^6}{720(1-z)}$$

1, 28, 546, 9450, 157773, 2637558, 44990231, 790943153, 14409322928,  
272803210680, 5374523477960, 110228466184200, 2353125040549984

### Differences of reciprocals of unity

Réf. DKB 228.

**HIS2** A1240 Approximants de Padé

**HIS1** N2049 Fraction rationnelle

$$1$$


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$$(1 - 2z) (1 - 3z) (1 - 6z)$$

1, 11, 85, 575, 3661, 22631, 137845, 833375, 5019421, 30174551

### Differences of reciprocals of unity

Réf. DKB 228.

**HIS2** A1241 Approximants de Padé

**HIS1** N2305 Fraction rationnelle

$$1$$


---


$$(1 - 6z) (1 - 8z) (1 - 12z) (1 - 24z)$$

1, 50, 1660, 46760, 1217776, 30480800, 747497920, 18139003520,  
437786795776



### Permutations of length n by length of runs

Réf. AMM 65 534 58. DKB 262. C1 261.

**HIS2** A1250 Inverse fonctionnel Relié aux nombres tangents

**HIS1** N0472 exponentielle (complexe)

$$2 \tan(1/4 \text{ Pi} + 1/2 z)$$

2, 4, 10, 32, 122, 544, 2770, 15872, 101042, 707584, 5405530, 44736512,  
398721962, 3807514624, 38783024290, 419730685952, 4809759350882

### Permutations of length n by rises

Réf. DKB 263.

**HIS2** A1260 P-réurrences Suite P-récurrente

**HIS1** N1657

$$\begin{aligned}
 & a(n) (1 - n) = \\
 & - (n + 3) (n + 2) a(n - 2) \\
 & - (n + 3) (n - 1) a(n - 1)
 \end{aligned}$$

1, 5, 45, 385, 3710, 38934, 444990, 5506710, 73422855, 1049946755,  
16035550531, 260577696015

**Lah numbers****Réf.** R1 44. C1 156.**HIS2** A1286 Dérivée logarithmique f.g. exponentielle**HIS1** N1766 Fraction rationnelle

$$\frac{2z + 1}{(1 - z)^4}$$

1, 6, 36, 240, 1800, 15120, 141120, 1451520, 16329600, 199584000,  
 2634508800, 37362124800, 566658892800, 9153720576000,  
 156920924160000

**Binomial coefficients C(n,10)****Réf.** D1 2 7. RS3. B1 196. AS1 828.**HIS2** A1287 Approximants de Padé**HIS1** N2046 Fraction rationnelle

$$\frac{1}{(1 - z)^{11}}$$

1, 11, 66, 286, 1001, 3003, 8008, 19448, 43758, 92378, 184756, 352716,  
 646646, 1144066, 1961256, 3268760, 5311735, 8436285, 13123110,  
 20030010, 30045015

**Binomial coefficients C(n,11)****Réf.** D1 2 7. RS3. B1 196. AS1 828.**HIS2** A1288      Approximants de Padé**HIS1** N2073      Fraction rationnelle

$$\frac{1}{(1 - z)^{12}}$$

1, 12, 78, 364, 1365, 4368, 12376, 31824, 75582, 167960, 352716, 705432,  
 1352078, 2496144, 4457400, 7726160, 13037895, 21474180, 34597290,  
 54627300

**Stirling numbers of second kind****Réf.** AS1 835. DKB 223.**HIS2** A1296      Approximants de Padé**HIS1** N1845      Fraction rationnelle

$$\frac{1 + 2z}{(1 - z)^5}$$

1, 7, 25, 65, 140, 266, 462, 750, 1155, 1705, 2431, 3367, 4550, 6020, 7820,  
 9996, 12597, 15675, 19285, 23485, 28336, 33902, 40250, 47450, 55575,  
 64701, 74907, 86275

### Stirling numbers of second kind

Réf. AS1 835. DKB 223.

HIS2 A1297 Approximants de Padé

HIS1 N2136 Fraction rationnelle

$$\frac{1 + 8z + 6z^2}{(1 - z)^7}$$

1, 15, 90, 350, 1050, 2646, 5880, 11880, 22275, 39325, 66066, 106470,  
165620, 249900, 367200, 527136, 741285, 1023435, 1389850, 1859550,  
2454606, 3200450

### Stirling numbers of second kind

Réf. AS1 835. DKB 223.

HIS2 A1298 Approximants de Padé

HIS1 N2272 Fraction rationnelle

$$\frac{1 + 22z + 58z^2 + 24z^3}{(1 - z)^9}$$

1, 31, 301, 1701, 6951, 22827, 63987, 159027, 359502, 752752, 1479478,  
2757118, 4910178, 8408778, 13916778, 22350954, 34952799, 53374629,  
79781779

### Stirling numbers of first kind

Réf. AS1 833. DKB 226.

HIS2 A1303 Approximants de Padé

HIS1 N1779 Fraction rationnelle

$$\frac{6 + 8z + z^2}{(1 - z)^7}$$

6, 50, 225, 735, 1960, 4536, 9450, 18150, 32670, 55770, 91091, 143325, 218400, 323680, 468180, 662796, 920550, 1256850, 1689765, 2240315, 2932776

### Generalized pentagonal numbers

Réf. NZ66 231. AMM 76 884 69. HO70 119.

HIS2 A1318 Approximants de Padé

HIS1 N0511 Fraction rationnelle

$$\frac{z^2 + z + 1}{(1 + z)^2 (1 - z)^3}$$

1, 2, 5, 7, 12, 15, 22, 26, 35, 40, 51, 57, 70, 77, 92, 100, 117, 126, 145, 155, 176, 187, 210, 222, 247, 260, 287, 301, 330, 345, 376, 392, 425, 442, 477, 495, 532, 551, 590

Réf. MQET 1 9 16. AMM 56 445 49.

**HIS2** A1333      Approximants de Padé

**HIS1** N1064      Fraction rationnelle

$$\frac{1 + z}{1 - 2z - z^2}$$

1, 3, 7, 17, 41, 99, 239, 577, 1393, 3363, 8119, 19601, 47321, 114243,  
275807, 665857, 1607521, 3880899, 9369319, 22619537, 54608393,  
131836323, 318281039

### Binomial coefficient sums

Réf. CJM 22 26 70.

**HIS2** A1338      Recouvrements

**HIS1** N0697      exponentielle

$$- \exp(z) (\ln(1 - z) + 1) + 2$$

1, 0, 2, 7, 23, 88, 414, 2371, 16071, 125672, 1112082

**Réf.** CJM 22 26 70. AD74 70.

**HIS2** A1339 Dérivée logarithmique Suite P-récurrente

**HIS1** N1164 exponentielle

$$a(n) = (n + 1) a(n - 1) + (-n + 2) a(n - 2)$$

$$(n+1)! C(n,k), k=0\dots n$$

$$\frac{\exp(z)}{(1-z)^2}$$

1, 3, 11, 49, 261, 1631, 11743, 95901, 876809, 8877691, 98641011,  
1193556233, 15624736141, 220048367319, 3317652307271,  
53319412081141, 909984632851473

**Réf.** CJM 22 26 70.

**HIS2** A1340 Dérivée logarithmique Suite P-récurrente

**HIS1** N0736 exponentielle

$$\frac{2 \exp(z)}{(1-z)^3}$$

2, 8, 38, 212, 1370, 10112, 84158, 780908, 8000882

Réf. CJM 22 26 70.

**HIS2** A1341 Dérivée logarithmique Suite P-récurrente

**HIS1** N1755 exponentielle

$$\frac{6 \exp(z)}{(1-z)^4}$$

6, 30, 174, 1158, 8742, 74046, 696750, 7219974

Réf. CJM 22 26 70.

**HIS2** A1342 Dérivée logarithmique Suite P-récurrente

**HIS1** N2233 exponentielle

$$\frac{24 \exp(z)}{(1-z)^5}$$

24, 144, 984, 7584, 65304, 622704, 6523224



Réf. CJM 22 26 70.

HIS2 A1344

Dérivée

Suite P-récurrente

HIS1 N0548

exponentielle

$$a(n) = (n - 3) a(n - 2) + (n - 1) a(n - 1)$$

$$\frac{1}{(z - 1)^2} - \frac{2}{z - 1} - \ln(z - 1)$$

2, 5, 11, 38, 174, 984, 6600, 51120, 448560, 4394880, 47537280, 562464000,  
7224940800, 100111334400, 1488257971200, 23625316915200,  
398840682240000, 7134671351808000

Réf. EUR 11 22 49.

HIS2 A1350

Approximants de Padé

HIS1 N1311

Fraction rationnelle

$$\frac{1 + z^2}{(1 - z)(1 + z)(1 - z - z^2)}$$

1, 1, 4, 5, 11, 16, 29, 45, 76, 121, 199, 320, 521, 841, 1364, 2205, 3571, 5776,  
9349, 15125, 24476, 39601, 64079, 103680, 167761, 271441, 439204,  
710645, 1149851

### Associated Mersenne numbers

Réf. EUR 11 22 49.

**HIS2** A1351      Approximants de Padé      expression factorisée

**HIS1** N0879      Fraction rationnelle

$$\frac{z (1 - z + z^2) (z^2 + 3z + 1)}{(1 - z - z^3) (1 - z^2 - z^3)}$$

0, 1, 3, 1, 3, 11, 9, 8, 27, 37, 33, 67, 117, 131, 192, 341, 459, 613, 999, 1483, 2013, 3032, 4623, 6533, 9477, 14311, 20829, 30007, 44544, 65657, 95139, 139625, 206091

Réf. MOC 24 180 70.

**HIS2** A1352      Approximants de Padé

**HIS1** N1731      Fraction rationnelle

$$\frac{(1 + z^2)}{1 - 4z + z^2}$$

1, 6, 24, 90, 336, 1254, 4680, 17466, 65184, 243270, 907896, 3388314, 12645360, 47193126, 176127144, 657315450, 2453134656, 9155223174, 34167758040

**Réf.** MMAG 40 78 67. MOC 24 180 70; 25 799 71.

**HIS2** A1353      Approximants de Padé

**HIS1** N1420      Fraction rationnelle

$$\frac{1}{1 - 4z + z^2}$$

1, 4, 15, 56, 209, 780, 2911, 10864, 40545, 151316, 564719, 2107560,  
7865521, 29354524, 109552575, 408855776, 1525870529, 5694626340,  
21252634831

### **n-node trees of height at most 3**

**Réf.** IBMJ 4 475 60. KU64.

**HIS2** A1383      Euler

**HIS1** N0422      Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

**c(n) = partages de n**

1, 1, 2, 4, 8, 15, 29, 53, 98, 177, 319, 565, 1001, 1749, 3047, 5264,  
9054, 15467, 26320, 44532, 75054, 125904, 210413, 350215, 580901,  
960035, 158153

**n-node trees of height at most 4**

Réf. IBMJ 4 475 60. KU64.

HIS2 A1384

Euler

a(n) = suite précédente

HIS1 NO449

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

**c(n) = arbres de hauteur au plus 3**

1, 1, 2, 4, 9, 19, 42, 89, 191, 402, 847, 1763, 3667, 7564, 15564, 31851,  
64987, 132031, 267471, 539949, 1087004, 2181796, 4367927, 8721533,  
17372967, 34524291

**n-node trees of height at most 5**

Réf. IBMJ 4 475 60. KU64.

HIS2 A1385

Euler

a(n) = suite précédente

HIS1 NO453

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

**c(n) = arbres de hauteur au plus 4**

1, 1, 2, 4, 9, 20, 47, 108, 252, 582, 1345, 3086, 7072, 16121, 36667,  
83099, 187885, 423610, 953033, 2139158, 4792126, 10714105, 23911794,  
53273599, 118497834

Réf. QAM 14 407 56. MOC 29 216 75.

**HIS2** A1392          Hypergéométrique          Suite P-récurrente

**HIS1** N1981          algébrique

${}_2F_1([5, 9/2], [10], 4z)$

$$\frac{512 z^4}{(1 + (1 - 4z)^{1/2})^9}$$

1, 9, 54, 273, 1260, 5508, 23256, 95931, 389367, 1562275, 6216210,  
24582285, 96768360, 379629720, 1485507600, 5801732460, 22626756594,  
88152205554

### Partitions into at most 3 parts

Réf. RS4 2. AMM 86 687 79.

**HIS2** A1399          Approximants de Padé

**HIS1** N0186          Fraction rationnelle

$$\frac{1}{(1-z)(1-z^2)(1-z^3)}$$

1, 1, 2, 3, 4, 5, 7, 8, 10, 12, 14, 16, 19, 21, 24, 27, 30, 33, 37, 40, 44, 48, 52,  
56, 61, 65, 70, 75, 80, 85, 91, 96, 102, 108, 114, 120, 127, 133, 140, 147, 154,  
161, 169, 176, 184

### Partitions into at most 4 parts

Réf. RS4 2.

HIS2 A1400 Approximants de Padé

HIS1 N0229 Fraction rationnelle

$$\frac{1}{(1-z)(1-z^2)(1-z^3)(1-z^4)}$$

1, 2, 3, 5, 6, 9, 11, 15, 18, 23, 27, 34, 39, 47, 54, 64, 72, 84, 94, 108, 120, 136, 150, 169, 185, 206, 225, 249, 270, 297, 321, 351, 378, 411, 441, 478, 511, 551, 588, 632, 672

### Partitions of n into at most 5 parts

Réf. RS4 2.

HIS2 A1401 Recoupelement

HIS1 N0237 Fraction rationnelle

$$\frac{1}{(1-z)(1-z^2)(1-z^3)(1-z^4)(1-z^5)}$$

1, 2, 3, 5, 7, 10, 13, 18, 23, 30, 37, 47, 57, 70, 84, 101, 119, 141, 164, 192, 221, 255, 291, 333, 377, 427, 480, 540, 603, 674, 748, 831, 918, 1014, 1115, 1226, 1342, 1469

### Partitions of n into at most 6 parts

Réf. CAY 10 415. RS4 2.

HIS2 A1402 Euler

HIS1 N0243 Fraction rationnelle

$$\frac{1}{(1-z)(1-z^2)(1-z^3)(1-z^4)(1-z^5)(1-z^6)}$$

1, 1, 2, 3, 5, 7, 11, 14, 20, 26, 35, 44, 58, 71, 90, 110, 136, 163, 199, 235, 282, 331, 391, 454, 532, 612, 709, 811, 931, 1057, 1206, 1360, 1540, 1729, 1945, 2172, 2432

### Central binomial coefficients

Réf. RS3. AS1 828. JCT 1 299 66.

HIS2 A1405 LLL Suite P-récurrente

HIS1 N0294 algébrique

$C(n, \lfloor n/2 \rfloor)$

$$\frac{1 - 4z^2 - (1 - 4z^2)^{1/2}}{2(2z^3 - z^2)}$$

1, 2, 3, 6, 10, 20, 35, 70, 126, 252, 462, 924, 1716, 3432, 6435, 12870, 24310, 48620, 92378, 184756, 352716, 705432, 1352078, 2704156, 5200300, 10400600

### Catalan numbers -1

Réf. MOC 22 390 68.

**HIS2** A1453

LLL

Suite P-récurrente

**HIS1** N1409

algébrique

$$(n + 2) a(n) = (6n + 4) a(n - 1) + (-9n + 4) a(n - 2) + (4n - 6) a(n - 3)$$

$$\frac{1 - 4z + 3z^2 - (-4z - 1)(z - 1)^{4/2}}{2(z^3 - 2z^4 + z^5)}$$

1, 4, 13, 41, 131, 428, 1429, 4861, 16795, 58785, 208011, 742899, 2674439, 9694844, 35357669, 129644789, 477638699, 1767263189, 6564120419, 24466267019

### Degree n permutations of order dividing 3

Réf. CJM 7 159 55.

**HIS2** A1470

Dérivée logarithmique

Suite P-récurrente

**HIS1** N1118

exponentielle

$$a(n) = a(n - 1) + (n^2 - 3n + 2) a(n - 3)$$

$$(1 + z^2) \exp(1/3 z (3 + z^2))$$

1, 1, 3, 9, 21, 81, 351, 1233, 5769, 31041, 142011, 776601, 4874013, 27027729, 168369111, 1191911841, 7678566801, 53474964993, 418199988339



### Degree n permutations of order dividing 4

Réf. CJM 7 159 55.

**HIS2** A1472 Dérivée logarithmique Suite P-récurrente

**HIS1** N0495 exponentielle

$$a(n) = a(n - 1) + (n^3 - 6n^2 + 11n - 6) a(n - 4) + (n - 1) a(n - 2)$$

$$(1 + z + z^3) \exp\left(\frac{1}{4} z (4 + z^3 + 2z)\right)$$

1, 2, 4, 16, 56, 256, 1072, 6224, 33616, 218656, 1326656, 9893632,  
70186624, 574017536, 4454046976, 40073925376, 347165733632,  
3370414011904

Réf. R1 86 (divided by 2).

**HIS2** A1475 Dérivée logarithmique Suite P-récurrente

**HIS1** N0573 exponentielle

$$a(n) = a(n - 1) + n a(n - 2)$$

$$\exp\left(\frac{1}{2} z^2 + z + \ln(2 + 2z + z^2)\right)$$

1, 2, 5, 13, 38, 116, 382, 1310, 4748, 17848, 70076, 284252, 1195240,  
5174768, 23103368, 105899656, 498656912, 2404850720, 11879332048,  
59976346448

### Stochastic matrices of integers

Réf. DMJ 35 659 68.

**HIS2** A1495            Recouplements            Suite P-récurrente

**HIS1** N1188            exponentielle:algébrique

$$\frac{\exp(z^2 (z^2 + 3z - 2) / (1-z))}{(1-z)^{3/2}}$$

0, 1, 1, 1, 3, 13, 70, 462, 3592, 32056, 322626, 3611890, 44491654,  
597714474, 8693651092, 136059119332, 2279212812480, 40681707637888,  
770631412413148

### 4 x 4 stochastic matrices of integers

Réf. SS70. CJN 13 283 70. SIAC 4 477 75. ANS 4 1179 76.

**HIS2** A1496            Dérivée logarithmique

**HIS1** N2240            Fraction rationnelle

$$\frac{(z^4 + 12z^3 + 62z^2 + 12z + 1)(z + 1)^2}{(z - 1)^{10}}$$

1, 24, 282, 2008, 10147, 40176, 132724, 381424, 981541, 2309384, 5045326,  
10356424, 20158151, 37478624, 66952936, 115479776, 193077449,  
313981688, 498033282, 772409528

### Stochastic matrices of integers

Réf. SS70. DMJ 33 763 66.

**HIS2** A1499 équations différentielles Formule de B. Salvy

**HIS1** N1792 exponentielle

$$\frac{(z^2 - 2z + 4) \exp(-1/2 z)}{(1 - z)^{5/2}}$$

0, 1, 6, 90, 2040, 67950, 3110940, 187530840, 14398171200,  
1371785398200, 158815387962000, 21959547410077200,  
3574340599104475200

### Bessel polynomial $y_n(1)$

Réf. RCI 77.

**HIS2** A1514 P-réurrences Suite P-récurrente

**HIS1** N1993

$$a(n) = (2n + 4) a(n - 1) + a(n - 4) \\ + (-6n + 9) a(n - 2) + (2n - 10) a(n - 3)$$

0, 1, 9, 81, 835, 9990, 137466, 2148139, 37662381, 733015845,  
15693217705, 366695853876, 9289111077324, 253623142901401,  
7425873460633005

Réf. RCI 77.

**HIS2** A1515 équations différentielles Suite P-récurrente  
**HIS1** N0713 exponentielle:algébrique Formule de B. Salvy

$$a(n) = (2n-1) a(n-1) + a(n-2)$$

$$\frac{\exp(1 - (1 - 2z)^{1/2})}{(1 - 2z)^{1/2}}$$

1, 2, 7, 37, 266, 2431, 27007, 353522, 5329837, 90960751, 1733584106,  
 36496226977, 841146804577, 21065166341402, 569600638022431

### Denominators of convergents to $e = \exp(1)$

Réf. BAT 17 1871. MOC 2 69 46.

**HIS2** A1517 équations différentielles Suite P-récurrente  
**HIS1** N1240 exponentielle Voir A2119

$$a(n) = (4n - 6) a(n - 1) + a(n - 2)$$

$$\frac{\exp(1/2 - 1/2 (1 - 4z)^{1/2})}{(1 - 4z)^{1/2}}$$

1, 3, 19, 193, 2721, 49171, 1084483, 28245729, 848456353, 28875761731,  
 1098127402131, 46150226651233, 2124008553358849,  
 106246577894593683

### Bessel polynomial $y_n(3)$

Réf. RCI 77.

**HIS2** A1518 équations différentielles Suite P-récurrente  
**HIS1** N1495 exponentielle Formule de B. Salvy

$$a(n) = (6n - 9)a(n - 1) + a(n - 2)$$

$$\frac{\exp\left(\frac{1}{3} - \frac{1}{3}(1 - 6z)^{1/2}\right)}{(1 - 6z)^{1/2}}$$

1, 4, 37, 559, 11776, 318511, 10522639, 410701432, 18492087079,  
 943507142461, 53798399207356, 3390242657205889, 233980541746413697

### Bisection of Fibonacci sequence

Réf. R1 39. FQ 9 283 71.

**HIS2** A1519 Approximants de Padé  
**HIS1** N0569 Fraction rationnelle

$$\frac{1 - z}{1 - 3z + z^2}$$

1, 2, 5, 13, 34, 89, 233, 610, 1597, 4181, 10946, 28657, 75025, 196418,  
 514229, 1346269, 3524578, 9227465, 24157817, 63245986, 165580141,  
 433494437

### Stacks, or planar partitions of n

Réf. PCPS 47 686 51. QJMO 23 153 72.

**HIS2** A1522 Approximants de Padé Conjecture

**HIS1** N0238 Fraction rationnelle

$$\frac{z^{10} + z^8 - 2z^7 - z^6 + 2z^5 + z^3 - z^2 - z + 1}{(z+1)^4 (z^3 + z^2 - 1) (z-1)^3}$$

1, 1, 1, 2, 3, 5, 7, 10, 14, 19, 26, 35, 47, 62, 82, 107, 139, 179, 230, 293

### Transpositions needed to generate permutations of length n

Réf. CJN 13 155 70.

**HIS2** A1540 Inverse fonctionnel Suite P-récurrente

**HIS1** N0734 exponentielle

$a(n) = -n a(n-3) + (n+2) a(n-1) + (-n+1) a(n-2) + (n-2) a(n-4)$   
 $[\cosh(1)^n] - 1$

$$\frac{(2z^3 + 3z^2 - 5z) \exp(z)}{2(z-1)^3} + \frac{1-z^2}{(z-1)^3 \exp(z)}$$

0, 2, 8, 36, 184, 1110, 7776, 62216, 559952, 5599530, 61594840, 739138092,  
 9608795208, 134523132926, 2017846993904, 32285551902480

**Réf.** NCM 4 166 1878. QJM 45 14 14. ANN 36 644 35. AMM 75 683 68.

**HIS2** A1541      Approximants de Padé

**HIS1** N1231      Fraction rationnelle

$$\frac{1 - 3z}{1 - 6z + z^2}$$

1, 3, 17, 99, 577, 3363, 19601, 114243, 665857, 3880899, 22619537,  
131836323, 768398401, 4478554083, 26102926097, 152139002499,  
886731088897

**Réf.** NCM 4 166 1878. ANN 30 72 28. AMM 75 683 68.

**HIS2** A1542      Approximants de Padé

**HIS1** N0802      Fraction rationnelle

$$\frac{2z}{z^2 - 6z + 1}$$

0, 2, 12, 70, 408, 2378, 13860, 80782, 470832, 2744210, 15994428,  
93222358, 543339720, 3166815962, 18457556052, 107578520350,  
627013566048

$$1^n + 2^n + 3^n$$

Réf. AS1 813.

HIS2 A1550 Approximants de Padé

HIS1 N1020 Fraction rationnelle

$$3 - 12z + 11z^2$$

---


$$(1 - z)(1 - 2z)(1 - 3z)$$

3, 6, 14, 36, 98, 276, 794, 2316, 6818, 20196, 60074, 179196, 535538,  
1602516, 4799354, 14381676, 43112258, 129271236, 387682634,  
1162785756, 3487832978

$$1^n + 2^n + 3^n + 4^n$$

Réf. AS1 813.

HIS2 A1551 Approximants de Padé

HIS1 N1375 Fraction rationnelle

$$2(5z - 2)(5z^2 - 5z + 1)$$

---


$$(1 - z)(1 - 2z)(1 - 3z)(1 - 4z)$$

4, 10, 30, 100, 354, 1300, 4890, 18700, 72354, 282340, 1108650, 4373500,  
17312754, 68711380, 273234810, 1088123500, 4338079554, 17309140420



$$1^n + 2^n + 3^n + 4^n + 5^n$$

Réf. AS1 813.

HIS2 A1552 Approximants de Padé

HIS1 N1584 Fraction rationnelle

$$5 - 60z + 255z^2 - 450z^3 + 274z^4$$

---


$$(1 - z)(1 - 2z)(1 - 3z)(1 - 4z)(1 - 5z)$$

5, 15, 55, 225, 979, 4425, 20515, 96825, 462979, 2235465, 10874275,  
53201625, 261453379, 1289414505, 6376750435, 31605701625,  
156925970179

$$1^n + 2^n + 3^n + 4^n + 5^n + 6^n$$

Réf. AS1 813.

HIS2 A1553 Approximants de Padé

HIS1 N1723 Fraction rationnelle

$$(2 - 7z)(252z^4 - 392z^3 + 203z^2 - 42z + 3)$$

---


$$(1 - z)(1 - 2z)(1 - 3z)(1 - 4z)(1 - 5z)(1 - 6z)$$

6, 21, 91, 441, 2275, 12201, 67171, 376761, 2142595, 12313161, 71340451,  
415998681, 2438235715, 14350108521, 84740914531, 501790686201

$$1^n + 2^n + 3^n + 4^n + 5^n + 6^n + 7^n$$

Réf. AS1 813.

HIS2 A1554 Approximants de Padé

HIS1 N1850 Fraction rationnelle

$$8028 z^7 - 13196 z^6 + 7175 z^5 - 1071 z^4 - 350 z^3 + 154 z^2 - 21 z + 1$$

---


$$(1 - z)(1 - 2z)(1 - 3z)(1 - 4z)(1 - 5z)(1 - 6z)(1 - 7z)$$

1, 7, 28, 140, 784, 4676, 29008, 184820, 1200304, 7907396, 52666768,  
353815700, 2393325424, 16279522916, 111239118928, 762963987380,  
5249352196144

$$1^n + 2^n + 3^n + 4^n + 5^n + 6^n + 7^n + 8^n$$

Réf. AS1 813.

HIS2 A1555 Recouplements

HIS1 N1914 Fraction rationnelle

$$8 - 252 z + 3276 z^2 - 22680 z^3 + 89796 z^4 - 201852 z^5 + 236248 z^6 - 109584 z^7$$

---


$$(1 - z)(1 - 2z)(1 - 3z)(1 - 4z)(1 - 5z)(1 - 6z)(1 - 7z)(1 - 8z)$$

8, 36, 204, 1296, 8772, 61776, 446964, 3297456, 24684612, 186884496,  
1427557524, 10983260016, 84998999652, 660994932816, 5161010498484

### A simple recurrence

Réf. IC 16 351 70.

**HIS2** A1558

LLL

**HIS1** N1143

algébrique

$$(n + 3) a(n) = (-11/2 n + 21/2) a(n - 3) + (9/2 n + 11/2) a(n - 1) \\ + (-1/2 n + 9/2) a(n - 2) + (-2 n + 5) a(n - 4)$$

$$\frac{1 - 3z - z^2 - (-(-1 + 4z)(-1 + z + z^2))}{2(2z^4 + z^5)}$$

1, 3, 10, 33, 111, 379, 1312, 4596, 16266, 58082, 209010, 757259, 2760123, 10114131, 37239072, 137698584, 511140558, 1904038986, 7115422212, 26668376994

### A simple recurrence

Réf. IC 16 351 70.

**HIS2** A1559

LLL

Suite P-récurrente

**HIS1** N1418

algébrique

$$(n + 4) a(n) = (-15/2 n + 4) a(n - 3) + (11/2 n + 12) a(n - 1) \\ + (-4 n + 3) a(n - 2) + (-2 n + 3) a(n - 4)$$

$$\frac{1 - 4z + z^2 + 2z^3 - (-(-1 + 4z)(z^2 + 2z - 1))}{2(2z^5 + z^6)}$$

1, 4, 15, 54, 193, 690, 2476, 8928, 32358, 117866, 431381, 1585842, 5853849, 21690378, 80650536, 300845232, 1125555054, 4222603968, 15881652606

**Réf.** JRAM 198 61 57.

**HIS2** A1563          Hypergéométrique

**HIS1** N1436          exponentielle

$$a(n) = (n + 2) a(n-1) + (n - 1) a(n-2)$$

$${}_3F_2([1, 1, 1/2], [2, 2], 4z)$$

$$\frac{1 + z}{(1 - z)^3}$$

1, 4, 18, 96, 600, 4320, 35280, 322560, 3265920, 36288000, 439084800,  
5748019200, 80951270400, 1220496076800, 19615115520000,  
334764638208000

### 2nd differences of factorial numbers

**Réf.** JRAM 198 61 57.

**HIS2** A1564          Dérivée logarithmique          Suite P-récurrente

**HIS1** N1202          Fraction rationnelle          f.g. exponentielle

$$a(n) = (n + 2) a(n - 1) + (-n + 2) a(n - 2)$$

$$\frac{(1 + z)^2}{(1 - z)^3}$$

1, 3, 14, 78, 504, 3720, 30960, 287280, 2943360, 33022080, 402796800,  
5308934400, 75203251200, 1139544806400, 18394619443200,  
315149522688000

### 3rd differences of factorial numbers

Réf. JRAM 198 61 57.

**HIS2** A1565 Dérivée logarithmique Suite P-récurrente

**HIS1** N0793 exponentielle f.g. exponentielle

$$a(n) = (3 - n) a(n - 2) + (2 + n) a(n - 1)$$

$$-\frac{2}{(z-1)^3} - \frac{3}{(z-1)^2} - \frac{3}{z-1} + \ln(z-1) - 1$$

1, 2, 11, 64, 426, 3216, 27240, 256320, 2656080, 30078720, 369774720,  
4906137600, 69894316800, 1064341555200, 17255074636800,  
296754903244800

### From the solution to a Pellian

Réf. AMM 56 174 49.

**HIS2** A1570 Approximants de Padé

**HIS1** N2108 Fraction rationnelle

$$\frac{1 - z}{1 - 14z + z^2}$$

1, 13, 181, 2521, 35113, 489061, 6811741, 94875313, 1321442641,  
18405321661, 256353060613, 3570537526921, 49731172316281,  
692665874901013

### From the solution to a Pellian

Réf. AMM 56 175 49.

HIS2 A1571 Approximants de Padé

HIS1 N0762 Fraction rationnelle

$$\frac{z(2-z)}{(1-z)(1-4z+z^2)}$$

0, 2, 9, 35, 132, 494, 1845, 6887, 25704, 95930, 358017, 1336139, 4986540, 18610022, 69453549, 259204175, 967363152, 3610248434, 13473630585, 50284273907

### Winning moves in Fibonacci nim

Réf. FQ 3 62 65.

HIS2 A1581 Approximants de Padé

HIS1 N1359 Fraction rationnelle

$$\frac{(1+z)(3z^5+2z^3+z^2+z+2)}{(z^6+z^5+z^4+z^3+z^2+z+1)(z-1)}$$

4, 10, 14, 20, 24, 30, 36, 40, 46, 50, 56, 60, 66, 72, 76, 82, 86, 92, 96, 102, 108, 112, 118, 122, 128, 132, 138, 150, 160, 169, 176, 186, 192, 196, 202, 206, 212, 218, 222

### Product of Fibonacci and Pell numbers

Réf. FQ 3 213 65.

HIS2 A1582 Approximants de Padé

HIS1 N0779 Fraction rationnelle

$$\frac{(1 - z) (1 + z)}{1 - 2z - 7z^2 - 2z^3 + z^4}$$

1, 2, 10, 36, 145, 560, 2197, 8568, 33490, 130790, 510949, 1995840,  
7796413, 30454814, 118965250, 464711184, 1815292333, 7091038640,  
27699580729

### A generalized Fibonacci sequence

Réf. FQ 4 244 66.

HIS2 A1584 Approximants de Padé

HIS1 N0080 Fraction rationnelle

$$\frac{(z^2 - 1) (z^2 + z + 1)}{(z^4 - z^3 + 1) (z^4 + z^3 - 1)}$$

1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 4, 4, 4, 7, 7, 8, 12, 12, 16, 21, 21, 31, 37, 38, 58,  
65, 71, 106, 114, 135, 191, 201, 257, 341, 359, 485, 605, 652, 904, 1070,  
1202, 1664, 1894, 2237, 3029, 3370

Réf. FQ 5 288 67.

**HIS2** A1588      Approximants de Padé

**HIS1** N0901      Fraction rationnelle

$$\frac{1 + z - 3z^2}{(1 - z)(1 - z - z^2)}$$

1, 3, 3, 5, 7, 11, 17, 27, 43, 69, 111, 179, 289, 467, 755, 1221, 1975, 3195,  
5169, 8363, 13531, 21893, 35423, 57315, 92737, 150051, 242787, 392837,  
635623, 1028459

### Tribonacci numbers

Réf. FQ 5 211 67.

**HIS2** A1590      Approximants de Padé

**HIS1** N0296      Fraction rationnelle

$$\frac{249z^{14} + 249z^{13} + 249z^{12} - 249z^{11} + z - 1}{z^3 + z^2 + z - 1}$$

1, 0, 1, 2, 3, 6, 11, 20, 37, 68, 125, 479, 423, 778, 1431, 2632, 4841, 8904,  
16377, 30122, 55403, 101902, 187427, 344732, 634061, 1166220, 2145013,  
3945294, 7256527





Réf. FQ 8 267 70.

HIS2 A1595 Approximants de Padé

HIS1 N0974 Fraction rationnelle

$$\frac{1 - z + z^2}{(1 - z)(1 - z - z^2)}$$

1, 1, 3, 5, 9, 15, 25, 41, 67, 109, 177, 287, 465, 753, 1219, 1973, 3193, 5167, 8361, 13529, 21891, 35421, 57313, 92735, 150049, 242785, 392835, 635621, 1028457

### Related to factors of Fibonacci numbers

Réf. JA66 20.

HIS2 A1603 Approximants de Padé

HIS1 N2051 Fraction rationnelle

$$\frac{1 + 13z^2 + z^4}{(1 - z)(1 - 3z + z^2)(z^2 - 7z + 1)}$$

1, 11, 101, 781, 5611, 39161, 270281, 1857451, 12744061, 87382901, 599019851, 4105974961, 28143378001, 192899171531, 1322154751061, 9062194370461

### Related to factors of Fibonacci numbers

Réf. JA66 20.

HIS2 A1604 Approximants de Padé

HIS1 N2042 Fraction rationnelle

$$\frac{11 - 90z + 173z^2 - 90z^3 + 11z^4}{(1 - z)(1 - 3z + z^2)(z^2 - 7z + 1)}$$

11, 31, 151, 911, 5951, 40051, 272611, 1863551, 12760031, 87424711,  
599129311, 4106261531, 28144128251, 192901135711, 1322159893351

Réf. AMM 15 209 08. JA66 90. FQ 6(3) 68 68.

HIS2 A1608 Approximants de Padé

HIS1 N0163 Fraction rationnelle

$$\frac{z(2 + 3z)}{1 - z - z^2}$$

0, 2, 3, 2, 5, 5, 7, 10, 12, 17, 22, 29, 39, 51, 68, 90, 119, 158, 209, 277, 367,  
486, 644, 853, 1130, 1497, 1983, 2627, 3480, 4610, 6107, 8090, 10717,  
14197, 18807, 24914

**Réf.** JA66 91. FQ 6(3) 68 68.

**HIS2** A1609      Approximants de Padé

**HIS1** N1308      Fraction rationnelle

$$\frac{1 + 3z + z^2}{1 - z - z^3}$$

1, 1, 4, 5, 6, 10, 15, 21, 31, 46, 67, 98, 144, 211, 309, 453, 664, 973, 1426, 2090, 3063, 4489, 6579, 9642, 14131, 20710, 30352, 44483, 65193, 95545, 140028, 205221

**Réf.** JA66 96. MOC 15 397 71.

**HIS2** A1610      Approximants de Padé

**HIS1** N0291      Fraction rationnelle

$$\frac{z(z-2)}{(z-1)(1-z-z^2)}$$

0, 2, 3, 6, 10, 17, 28, 46, 75, 122, 198, 321, 520, 842, 1363, 2206, 3570, 5777, 9348, 15126, 24475, 39602, 64078, 103681, 167760, 271442, 439203, 710646, 1149850

**Fibonacci numbers + 1****Réf.** JA66 97.**HIS2** A1611      Approximants de Padé**HIS1** N0103      Fraction rationnelle

$$\frac{1 - 2z^2}{(z - 1)(1 - z - z^2)}$$

1, 2, 2, 3, 4, 6, 9, 14, 22, 35, 56, 90, 145, 234, 378, 611, 988, 1598, 2585,  
 4182, 6766, 10947, 17712, 28658, 46369, 75026, 121394, 196419, 317812,  
 514230, 832041

**Réf.** JA66 97.**HIS2** A1612      Approximants de Padé**HIS1** N0364      Fraction rationnelle

$$\frac{3z^2 - 2}{(z - 1)(1 - z - z^2)}$$

2, 4, 5, 8, 12, 19, 30, 48, 77, 124, 200, 323, 522, 844, 1365, 2208, 3572, 5779,  
 9350, 15128, 24477, 39604, 64080, 103683, 167762, 271444, 439205,  
 710648, 1149852

### Convolved Fibonacci numbers

Réf. RCI 101. FQ 15 118 77.

**HIS2** A1628      Approximants de Padé

**HIS1** N1124      Fraction rationnelle

$$\frac{1}{(1 - z - z^2 - z^3)}$$

1, 3, 9, 22, 51, 111, 233, 474, 942, 1836, 3522, 6666, 12473, 23109, 42447, 77378, 140109, 252177, 451441, 804228, 1426380, 2519640, 4434420, 7777860

### Convolved Fibonacci numbers

Réf. RCI 101. FQ 15 118 77.

**HIS2** A1629      Approximants de Padé

**HIS1** N0537      Fraction rationnelle

$$\frac{1}{(1 - z - z^2 - z^2)}$$

1, 2, 5, 10, 20, 38, 71, 130, 235, 420, 744, 1308, 2285, 3970, 6865, 11822, 20284, 34690, 59155, 100610, 170711, 289032, 488400, 823800, 1387225, 2332418, 3916061

**Tetranacci numbers**

Réf. FQ 8 7 70.

**HIS2** A1630 Approximants de Padé**HIS1** N0301 Fraction rationnelle

$$\frac{z(1+z)}{1-z-z^2-z^3-z^4}$$

0, 0, 1, 2, 3, 6, 12, 23, 44, 85, 164, 316, 609, 1174, 2263, 4362, 8408, 16207, 31240, 60217, 116072, 223736, 431265, 831290, 1602363, 3088654, 5953572, 11475879

**Tetranacci numbers**

Réf. FQ 8 7 70.

**HIS2** A1631 Approximants de Padé**HIS1** N0410 Fraction rationnelle

$$\frac{1-z}{1-z-z^2-z^3-z^4}$$

1, 0, 1, 2, 4, 7, 14, 27, 52, 100, 193, 372, 717, 1382, 2664, 5135, 9898, 19079, 36776, 70888, 136641, 263384, 507689, 978602, 1886316, 3635991, 7008598, 13509507

Réf. IDM 8 64 01. FQ 6(3) 68 68.

HIS2 A1634 Approximants de Padé

HIS1 N0281 Fraction rationnelle

$$\frac{z (2 + 3z + 4z^2)}{(1+z)(1-z-z^3)}$$

0, 2, 3, 6, 5, 11, 14, 22, 30, 47, 66, 99, 143, 212, 308, 454, 663, 974, 1425, 2091, 3062, 4490, 6578, 9643, 14130, 20711, 30351, 44484, 65192, 95546, 140027, 205222

### A Fielder sequence

Réf. FQ 6(3) 68 68.

HIS2 A1635 Approximants de Padé

HIS1 N0289 Fraction rationnelle

$$\frac{z (2 + 3z + 4z^2 + 5z^3)}{1 - z - z^2 - z^3 - z^4 - z^5}$$

0, 2, 3, 6, 10, 11, 21, 30, 48, 72, 110, 171, 260, 401, 613, 942, 1445, 2216, 3401, 5216, 8004, 12278, 18837, 28899, 44335, 68018, 104349, 160089, 245601, 376791



**A Fielder sequence**

Réf. FQ 6(3) 68 68.

HIS2 A1636 Approximants de Padé

HIS1 N0290 Fraction rationnelle

$$\frac{z (2 + 3z + 4z^2 + 5z^3 + 6z^4)}{(z - 1) (z^5 + z^3 + z - 1)}$$

0, 2, 3, 6, 10, 17, 21, 38, 57, 92, 143, 225, 351, 555, 868, 1366, 2142, 3365, 5282, 8296, 13023, 20451, 32108, 50417, 79160, 124295, 195159, 306431, 481139, 755462

**A Fielder sequence**

Réf. FQ 6(3) 68 68.

HIS2 A1638 Approximants de Padé

HIS1 N1348 Fraction rationnelle

$$\frac{(1 + z) (4z^2 - z + 1)}{(1 - z - z^2) (1 + z^2)}$$

1, 1, 4, 9, 11, 16, 29, 49, 76, 121, 199, 324, 521, 841, 1364, 2209, 3571, 5776, 9349, 15129, 24476, 39601, 64079, 103684, 167761, 271441, 439204, 710649, 1149851

**A Fielder sequence**

Réf. FQ 6(3) 68 68.

**HIS2** A1639 Approximants de Padé**HIS1** N1349 Fraction rationnelle

$$\frac{1 + 3z^2 + 4z^3 + 5z^4}{1 - z - z^3 - z^4 - z^5}$$

1, 1, 4, 9, 16, 22, 36, 65, 112, 186, 309, 522, 885, 1492, 2509, 4225, 7124,  
 12010, 20236, 34094, 57453, 96823, 163163, 274946, 463316, 780755,  
 1315687, 2217112

**A Fielder sequence**

Réf. FQ 6(3) 68 68.

**HIS2** A1640 Approximants de Padé**HIS1** N1352 Fraction rationnelle

$$\frac{1 + 3z^2 + 4z^3 + 5z^4 + 6z^5}{1 - z - z^3 - z^4 - z^5 - z^6}$$

1, 1, 4, 9, 16, 28, 43, 73, 130, 226, 386, 660, 1132, 1947, 3349, 5753, 9878,  
 16966, 29147, 50074, 86020, 147764, 253829, 436036, 749041, 1286728,  
 2210377, 3797047

**A Fielder sequence**

Réf. FQ 6(3) 69 68.

**HIS2** A1641 Approximants de Padé**HIS1** N0935 Fraction rationnelle

$$\frac{1 + 2z + 4z^3}{(1+z)(z^3 - z^2 + 2z - 1)}$$

1, 3, 4, 11, 16, 30, 50, 91, 157, 278, 485, 854, 1496, 2628, 4609, 8091, 14196,  
 24915, 43720, 76726, 134642, 236283, 414645, 727654, 1276941, 2240878,  
 3932464

**A Fielder sequence**

Réf. FQ 6(3) 69 68.

**HIS2** A1642 Approximants de Padé**HIS1** N0937 Fraction rationnelle

$$\frac{(1+z)(5z^3 - z^2 + z + 1)}{1 - z - z^2 - z^4 - z^5}$$

1, 3, 4, 11, 21, 36, 64, 115, 211, 383, 694, 1256, 2276, 4126, 7479, 13555,  
 24566, 44523, 80694, 146251, 265066, 480406, 870689, 1578040, 2860046,  
 5183558, 9394699

**A Fielder sequence**

Réf. FQ 6(3) 69 68.

**HIS2** A1643      Approximants de Padé**HIS1** N0938      Fraction rationnelle

$$\frac{1 + 2z + 4z^3 + 5z^4 + 6z^5}{(1+z)(1-z-z^2-z^3)(1-z+z^2)}$$

1, 3, 4, 11, 21, 42, 71, 131, 238, 443, 815, 1502, 2757, 5071, 9324, 17155,  
 31553, 58038, 106743, 196331, 361106, 664183, 1221623, 2246918,  
 4132721, 7601259

**A Fielder sequence**

Réf. FQ 6(3) 69 68.

**HIS2** A1644      Approximants de Padé**HIS1** N1040      Fraction rationnelle

$$\frac{1 + 2z + 3z^2}{1 - z - z^2 - z^3}$$

1, 3, 7, 11, 21, 39, 71, 131, 241, 443, 815, 1499, 2757, 5071, 9327, 17155,  
 31553, 58035, 106743, 196331, 361109, 664183, 1221623, 2246915,  
 4132721, 7601259

**A Fielder sequence**

Réf. FQ 6(3) 69 68.

**HIS2** A1645      Approximants de Padé**HIS1** N1041      Fraction rationnelle

$$\frac{1 + 2z + 3z^2 + 5z^4}{1 - z - z^2 - z^3 - z^5}$$

1, 3, 7, 11, 26, 45, 85, 163, 304, 578, 1090, 2057, 3888, 7339, 13862, 26179,  
 49437, 93366, 176321, 332986, 628852, 1187596, 2242800, 4235569,  
 7998951

**A Fielder sequence**

Réf. FQ 6(3) 70 68.

**HIS2** A1648      Approximants de Padé**HIS1** N1055      Fraction rationnelle

$$\frac{1 + 2z + 3z^2 + 4z^3}{1 - z - z^2 - z^3 - z^4}$$

1, 3, 7, 15, 26, 51, 99, 191, 367, 708, 1365, 2631, 5071, 9775, 18842, 36319,  
 70007, 134943, 260111, 501380, 966441, 1862875, 3590807, 6921503,  
 13341626

### A Fielder sequence

Réf. FQ 6(3) 70 68.

**HIS2** A1649      Approximants de Padé

**HIS1** N1056      Fraction rationnelle

$$\frac{1 + 2z + 3z^2 + 4z^3 + 6z^5}{1 - z - z^2 - z^3 - z^4 - z^6}$$

1, 3, 7, 15, 26, 57, 106, 207, 403, 788, 1530, 2985, 5812, 11322, 22052,  
42959, 83675, 162993, 317491, 618440, 1204651, 2346534, 4570791,  
8903409, 17342876

Réf. FQ 6(3) 261 68.

**HIS2** A1651      Approximants de Padé

**HIS1** N0357      Fraction rationnelle

$$\frac{z^2 + z + 1}{(1 + z)(z - 1)^2}$$

1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34,  
35, 37, 38, 40, 41, 43, 44, 46, 47, 49, 50, 52, 53, 55, 56, 58, 59, 61, 62, 64, 65,  
67, 68, 70, 71

### Pythagorean triangles

Réf. MLG 2 322 10. FQ 6(3) 104 68.

HIS2 A1652 Approximants de Padé

HIS1 N1247 Fraction rationnelle

$$\frac{z (z - 3)}{(z - 1) (z^2 - 6z + 1)}$$

0, 3, 20, 119, 696, 4059, 23660, 137903, 803760, 4684659, 27304196,  
159140519, 927538920, 5406093003, 31509019100, 183648021599,  
1070379110496

Réf. AMM 4 25 1897. MLG 2 322 10. FQ 6(3) 104 68.

HIS2 A1653 Approximants de Padé

HIS1 N1630 Fraction rationnelle

$$\frac{1 - 5z}{z^2 - 6z + 1}$$

1, 1, 5, 29, 169, 985, 5741, 33461, 195025, 1136689, 6625109, 38613965,  
225058681, 1311738121, 7645370045, 44560482149, 259717522849,  
1513744654945

### Product of successive Fibonacci numbers

Réf. FQ 6 82 68. BR72 17.

HIS2 A1654 Approximants de Padé

HIS1 N0628 Fraction rationnelle

$$\frac{1}{(1+z)(1-3z+z^2)}$$

1, 2, 6, 15, 40, 104, 273, 714, 1870, 4895, 12816, 33552, 87841, 229970,  
602070, 1576239, 4126648, 10803704, 28284465, 74049690, 193864606,  
507544127

### Fibonomial coefficients

Réf. FQ 6 82 68. BR72 74.

HIS2 A1655 Approximants de Padé

HIS1 N1208 Fraction rationnelle

$$\frac{1}{(z^2 - z - 1)(-1 + 4z + z^2)}$$

1, 3, 15, 60, 260, 1092, 4641, 19635, 83215, 352440, 1493064, 6324552,  
26791505, 113490195, 480752895, 2036500788, 8626757644, 36543528780



**Fibonomial coefficients**

Réf. FQ 6 82 68. BR72 74.

**HIS2** A1656      Approximants de Padé**HIS1** N1653      Fraction rationnelle

$$\frac{1}{(1-z)^2 (z^2 - 7z + 1) (z^2 + 3z + 1)}$$

1, 5, 40, 260, 1820, 12376, 85085, 582505, 3994320, 27372840, 187628376,  
 1285992240, 8814405145, 60414613805, 41408893560, 2838203264876,  
 19453338487220

**Fibonomial coefficients**

Réf. FQ 6 82 68. BR72 74.

**HIS2** A1657      Approximants de Padé**HIS1** N1945      Fraction rationnelle

$$\frac{1}{(z^2 + 11z - 1) (z^2 - 4z - 1) (1 - z - z^2)}$$

1, 8, 104, 1092, 12376, 136136, 1514513, 16776144, 186135312,  
 2063912136, 22890661872, 253854868176, 2815321003313,  
 31222272414424, 34620798314872

### Fibonomial coefficients

Réf. FQ 6 82 68. BR72 74.

**HIS2** A1658      Approximants de Padé

**HIS1** N2112      Fraction rationnelle

$$\frac{1}{(z+1)^2 (z^2 - 18z + 1)^2 (z^2 - 3z + 1)^2 (z^2 + 7z + 1)^2}$$

1, 13, 273, 4641, 85085, 1514513, 27261234, 488605194, 8771626578,  
157373300370, 2824135408458, 50675778059634, 909348684070099

### Coefficients of iterated exponentials

Réf. SMA 11 353 45. PRV A32 2342 85.

**HIS2** A1669      Recoupements

**HIS1** N1879      exponentielle

$$\exp(\exp(\exp(\exp(\exp(\exp(\exp(z) - 1) - 1) - 1) - 1) - 1) - 1) - 1)$$

1, 1, 7, 70, 910, 14532, 274778, 5995892, 148154860, 4085619622,  
124304629050, 4133867297490, 149114120602860, 5796433459664946,  
241482353893283349

### The partition function $G(n,3)$

Réf. CMB 1 87 58.

**HIS2** A1680 Dérivée logarithmique Suite P-récurrente

**HIS1** N0579 exponentielle

$$2 a(n) = (n^2 - 5n + 6) a(n - 3) + 2 a(n - 1) + (2n - 4) a(n - 2)$$

$$\exp\left(z + \frac{1}{2} z^2 + \frac{1}{6} z^3\right)$$

1, 1, 2, 5, 14, 46, 166, 652, 2780, 12644, 61136, 312676, 1680592, 9467680,  
55704104, 341185496, 2170853456, 14314313872, 97620050080,  
687418278544

### The partition function $G(n,4)$

Réf. CMB 1 87 58.

**HIS2** A1681 Dérivée logarithmique Suite P-récurrente

**HIS1** N0584 exponentielle

$$6 a(n) = (6n - 12) a(n - 2) + 6 a(n - 1) + (3n^2 - 15n + 18) a(n - 3) \\ + (n^3 - 9n^2 + 26n - 24) a(n - 4)$$

$$\exp\left(z + \frac{1}{2} z^2 + \frac{1}{6} z^3 + \frac{1}{24} z^4\right)$$

1, 1, 2, 5, 15, 51, 196, 827, 3795, 18755, 99146, 556711, 3305017, 20655285,  
135399720, 927973061, 6631556521, 49294051497, 380306658250,  
3039453750685

Réf. MMAG 41 17 68.

**HIS2** A1687      Approximants de Padé

**HIS1** N0338      Fraction rationnelle

$$\frac{z}{1 - z^2 - z^5}$$

0, 1, 0, 1, 0, 1, 1, 1, 2, 1, 3, 2, 4, 4, 5, 7, 7, 11, 11, 16, 18, 23, 29, 34, 45, 52, 68, 81, 102, 126, 154, 194, 235, 296, 361, 450, 555, 685, 851, 1046, 1301, 1601, 1986, 2452, 3032, 3753, 4633

#### 4th differences of factorial numbers

Réf. JRAM 198 61 57.

**HIS2** A1688      Dérivée      Suite P-récurrente

**HIS1** N1980      exponentielle

$$a(n) = (3 + n) a(n - 1) + (3 - n) a(n - 2)$$

$$\frac{2z(2z^2 + 3z - 4)}{(1 - z)^4} - \ln(-z + 1) + 1$$

1, 9, 53, 362, 2790, 24024, 229080, 2399760, 27422640, 339696000, 4536362880, 64988179200, 994447238400, 16190733081600, 279499828608000

### 5th differences of factorial numbers

Réf. JRAM 198 61 57.

**HIS2** A1689

Dérivée

Suite P-récurrente

**HIS1** N1920

exponentielle

$$a(n) = (4 + n) a(n - 1) + (3 - n) a(n - 2)$$

$$\ln(1 - z) + \frac{5z^4 - 10z^3 + 20z^2 + 9z - 1}{(1 - z)^5}$$

8, 44, 309, 2428, 21234, 205056, 2170680, 25022880, 312273360,  
4196666880, 60451816320, 929459059200, 15196285843200,  
263309095526400

Réf. RS3.

**HIS2** A1700

Hypergéométrique

Suite P-récurrente

**HIS1** N1144

algébrique

$${}_2F_1([1, 3/2], [2], 4z)$$

$$\frac{-1 + 4z + (1 - 4z)^{1/2}}{2(1 - 4z)}$$

1, 3, 10, 35, 126, 462, 1716, 6435, 24310, 92378, 352716, 1352078, 5200300,  
20058300, 77558760, 300540195, 1166803110, 4537567650, 17672631900

### Generalized Stirling numbers

Réf. PEF 77 7 62.

**HIS2** A1701      Approximants de Padé

**HIS1** N1735      Fraction rationnelle

$$\frac{1 - z - 6z^2 + 9z^3 - 5z^4 + z^5}{(1 - z)^5}$$

1, 6, 26, 71, 155, 295, 511, 826, 1266, 1860, 2640, 3641, 4901, 6461, 8365, 10660, 13396, 16626, 20406, 24795, 29855, 35651, 42251, 49726, 58150, 67600, 78156

### Generalized Stirling numbers

Réf. PEF 77 7 62.

**HIS2** A1702      Approximants de Padé

**HIS1** N2234      Fraction rationnelle

$$\frac{1 - 17z - 7z^2 + 29z^3 - 34z^4 + 21z^5 - 7z^6 + z^7}{(1 - z)^7}$$

1, 24, 154, 580, 1665, 4025, 8624, 16884, 30810, 53130, 87450, 138424, 211939, 315315, 457520, 649400, 903924, 1236444, 1664970, 2210460, 2897125, 3752749

### Generalized Stirling numbers

Réf. PEF 77 7 62.

**HIS2** A1705 Tableaux généralisés Suite P-récurrente

**HIS1** N1625 exponentielle (log)

$$a(n) = (1 + 2n) a(n-1) - n^2 a(n-2)$$

$$\frac{-\ln(-z+1)}{(1-z)^2}$$

1, 5, 26, 154, 1044, 8028, 69264, 663696, 6999840, 80627040, 1007441280,  
13575738240, 196287356160, 3031488633600, 49811492505600

### Generalized Stirling numbers

Réf. PEF 77 7 62.

**HIS2** A1706 Tableaux généralisés Suite P-récurrente

**HIS1** N1988 exponentielle (log)

$$a(n) = (3n^2 + 3n^3) a(n-1) + (-3n^2 - 3n^3 - n) a(n-2) + a(n-3)$$

$$\frac{\ln(1-z)^2}{(1-z)^2}$$

1, 9, 71, 580, 5104, 48860, 509004, 5753736, 70290936, 924118272,  
13020978816, 195869441664, 3134328981120, 53180752331520,  
953884282141440

### Generalized Stirling numbers

Réf. PEF 77 7 62.

**HIS2** A1707 Tableaux généralisés Suite P-récurrente  
**HIS1** N2119 exponentielle (log)

$$\frac{\ln(1 - z)^3}{6(z - 1)^2}$$

1, 14, 155, 1665, 18424, 214676, 2655764, 34967140, 489896616,  
 7292774280, 115119818736, 1922666722704, 33896996544384,  
 629429693586048

### Generalized Stirling numbers

Réf. PEF 77 7 62.

**HIS2** A1708 Tableaux généralisés Suite P-récurrente  
**HIS1** N2206 exponentielle (log)

$$\frac{\ln(1 - z)^4}{24(1 - z)^2}$$

1, 20, 295, 4025, 54649, 761166, 11028590, 167310220, 2664929476,  
 44601786944, 784146622896, 14469012689040, 279870212258064,  
 5667093514231200



## Generalized Stirling numbers

Réf. PEF 77 7 62.

**HIS2** A1709 Tableaux généralisés Suite P-récurrente

**HIS1** N2259 exponentielle (log)

$$\frac{\ln(1 - z)^5}{120 (z - 1)^2}$$

1, 27, 511, 8624, 140889, 2310945, 38759930, 671189310, 12061579816,  
225525484184, 4392554369840, 89142436976320, 1884434077831824

Réf. PEF 77 26 62.

**HIS2** A1710 Dérivée logarithmique f.g. exponentielle

**HIS1** N1179 Fraction rationnelle

$$\frac{1}{(1 - z)^3}$$

1, 3, 12, 60, 360, 2520, 20160, 181440, 1814400, 19958400, 239500800,  
3113510400, 43589145600, 653837184000, 10461394944000,  
177843714048000

### Generalized Stirling numbers

Réf. PEF 77 26 62.

**HIS2** A1711 Tableaux généralisés Suite P-récurrente

**HIS1** N1873 exponentielle

$$a(n) = -(n^2 + 2n + 1) a(n - 2) + (2n + 3) a(n - 1)$$

$$\frac{-\ln(1 - z)}{(1 - z)^3}$$

1, 7, 47, 342, 2754, 24552, 241128, 2592720, 30334320, 383970240,  
5231113920, 76349105280, 1188825724800, 19675048780800,  
344937224217600

### Generalized Stirling numbers

Réf. PEF 77 26 62.

**HIS2** A1712 Tableaux généralisés Suite P-récurrente

**HIS1** N2077 exponentielle (log)

$$a(n) = (3n^2 + 6n^3) a(n - 1) - (3n + 9n^2 + 7n^3) a(n - 2) \\ + (1 + 3n + 3n^2 + n^3) a(n - 3)$$

$$\frac{\ln^2(1 - z)}{2(1 - z)^3}$$

1, 12, 119, 1175, 12154, 133938, 1580508, 19978308, 270074016,  
3894932448, 59760168192, 972751628160, 16752851775360,  
304473528961920

### Generalized Stirling numbers

Réf. PEF 77 26 62.

**HIS2** A1713      Tableaux généralisés      Suite P-récurrente

**HIS1** N2190      exponentielle

$$\frac{\ln(1 - z)^3}{6(z - 1)^3}$$

1, 18, 245, 3135, 40369, 537628, 7494416, 109911300, 1698920916,  
27679825272, 474957547272, 8572072384512, 162478082312064,  
3229079010579072

Réf. PEF 77 26 62.

**HIS2** A1714      Tableaux généralisés      Suite P-récurrente

**HIS1** N2252      exponentielle

$$\frac{\ln(1 - z)^4}{24(1 - z)^3}$$

1, 25, 445, 7140, 111769, 1767087, 28699460, 483004280, 8460980836,  
154594537812, 2948470152264, 58696064973000, 1219007251826064

Réf. PEF 77 44 62.

**HIS2** A1715 Dérivée logarithmique f.g. exponentielle

**HIS1** N1445 Fraction rationnelle

$$\frac{1}{(z - 1)^4}$$

1, 4, 20, 120, 840, 6720, 60480, 604800, 6652800, 79833600, 1037836800,  
14529715200, 217945728000, 3487131648000, 59281238016000

### Generalized Stirling numbers

Réf. PEF 77 44 62.

**HIS2** A1716 Tableaux généralisés Suite P-récurrente

**HIS1** N1990 exponentielle

$a(n) = - (n^2 + 4n + 4) a(n - 2) + (2n + 5) a(n - 1)$

$$\frac{4 \ln(1 - z) - 1}{(1 - z)^5}$$

1, 9, 74, 638, 5944, 60216, 662640, 7893840, 101378880, 1397759040,  
20606463360, 323626665600, 5395972377600, 95218662067200,  
1773217155225600

## Generalized Stirling numbers

Réf. PEF 77 44 62.

**HIS2** A1717 Tableaux généralisés Suite P-récurrente

**HIS1** N2143 exponentielle Formule de B. Salvy

$$a(n) = - ( 9 n^3 + 3 n^2 ) a(n - 1) + (19 n^3 + 15 n^2 + 3 n) a(n - 2) \\ - ( 8 n^3 + 12 n^2 + 6 n + 1 ) a(n - 3)$$

$$\frac{10 \ln(1 - z)^2 - 9 \ln(1 - z) + 1}{(1 - z)^6}$$

1, 15, 179, 2070, 24574, 305956, 4028156, 56231712, 832391136,  
13051234944, 216374987520, 3785626465920, 69751622298240,  
1350747863435520

Réf. PEF 77 61 62.

**HIS2** A1720 Approximants de Padé f.g. exponentielle

**HIS1** N1634 Fraction rationnelle

$$\frac{1}{(1 - z)^5}$$

1, 5, 30, 210, 1680, 15120, 151200, 1663200, 19958400, 259459200,  
3632428800, 54486432000, 871782912000, 14820309504000,  
266765571072000

### Generalized Stirling numbers

Réf. PEF 77 61 62.

**HIS2** A1721 Tableaux généralisés Suite P-récurrente

**HIS1** N2052 exponentielle

$$a(n) = (2n + 7) a(n-1) - (n^2 + 6n + 9) a(n-2)$$

$$1 - 5 \ln(1 - z)$$

---


$$\frac{6}{(z - 1)}$$

1, 11, 107, 1066, 11274, 127860, 1557660, 20355120, 284574960,  
4243508640, 67285058400, 1131047366400, 20099588140800,  
376612896038400

### Generalized Stirling numbers

Réf. PEF 77 61 62.

**HIS2** A1722 Tableaux généralisés Suite P-récurrente

**HIS1** N2191 exponentielle:log

$$a(n) = (3n + 12) a(n-1) - (3n^2 - 21n - 37) a(n-2) \\ + (n^3 + 9n^2 + 27n + 27) a(n-3)$$

$$1 + 15 \ln(1 - z)^2 - 11 \ln(1 - z)$$

---


$$\frac{7}{(1 - z)}$$

1, 18, 251, 3325, 44524, 617624, 8969148, 136954044, 2201931576,  
37272482280, 663644774880, 12413008539360, 243533741849280,  
5003753991174720

**Réf.** PEF 107 5 63.

**HIS2** A1725 Dérivée logarithmique f.g. exponentielle

**HIS1** N1772 Fraction rationnelle

$$\frac{1}{(1 - z)^6}$$

1, 6, 42, 336, 3024, 30240, 332640, 3991680, 51891840, 726485760,  
10897286400, 174356582400, 2964061900800, 53353114214400,  
1013709170073600

**Réf.** PEF 107 19 63.

**HIS2** A1730 Dérivée logarithmique f.g. exponentielle

**HIS1** N1876 Fraction rationnelle

$$\frac{1}{(1 - z)^7}$$

1, 7, 56, 504, 5040, 55440, 665280, 8648640, 121080960, 1816214400,  
29059430400, 494010316800, 8892185702400, 168951528345600,  
3379030566912000

**Lah numbers**

Réf. R1 44. C1 156.

**HIS2** A1754 Dérivée logarithmique**HIS1** N2079 Fraction rationnelle

$$\frac{3z^2 + 6z + 1}{(z - 1)^6}$$

1, 12, 120, 1200, 12600, 141120, 1693440, 21772800, 299376000,  
 4390848000, 68497228800, 1133317785600, 19833061248000,  
 366148823040000

**Lah numbers**

Réf. R1 44. C1 156.

**HIS2** A1755 Dérivée logarithmique**HIS1** N2207 Fraction rationnelle

$$\frac{4z^3 + 18z^2 + 12z + 1}{(z - 1)^8}$$

1, 20, 300, 4200, 58800, 846720, 12700800, 199584000, 3293136000,  
 57081024000, 1038874636800, 19833061248000, 396661224960000



### Expansion of an integral

Réf. C1 167.

HIS2 A1756

Hypergéométrique

Suite P-récurrente

HIS1 N2131

algébrique

f.g. exponentielle

$$\frac{15 z (2 - 6 z + 5 z^2)}{2 (1 - 2 z)^{5/2}}$$

15, 60, 450, 4500, 55125, 793800, 13097700

### Dissections of a disk

Réf. CMA 2 25 70. MAN 191 98 71.

HIS2 A1761

Hypergéométrique

Inverse fonctionnel de A1561

HIS1 N1478

algébrique

Suite P-récurrente.

${}_3F_2([1, 1, 1/2], [2, 2], 4z)$

$n a(n) = 2 (n - 1) (2n - 3) a(n - 1)$

$$\frac{1 - (1 - 4z)^{1/2}}{2z}$$

1, 1, 4, 30, 336, 5040, 95040, 2162160, 57657600

### Dissections of a ball

Réf. CMA 2 25 70. MAN 191 98 71.

**HIS2** A1763 Inverse fonctionnel Suite P-récurrente

**HIS1** N1788 algébrique 3è degré

**S(z) est l'inverse de**

$$\frac{z}{(1+z)^3}$$

1, 1, 6, 72, 1320, 32760, 1028160, 39070080

### Binomial coefficients $C(3n, n-1)/n$

Réf. CMA 2 25 70. MAN 191 98 71. FQ 11 125 73. DM 9 355 74.

**HIS2** A1764 Hypergéométrique Suite P-récurrente

**HIS1** N1174 algébrique 3è degré f.g. exponentielle

${}_3F_2([1, 5/3, 4/3], [2, 5/2], 27z/4)$

**S(z) est racine**

de

$$1 - S(z) + 3 S(z)^2 z + 3 S(z)^2 z^2 + S(z)^3 z^3$$

1, 3, 12, 55, 273, 1428, 7752, 43263, 246675, 1430715, 8414640, 50067108,  
300830572, 1822766520, 11124755664, 68328754959, 422030545335,  
2619631042665

### Coefficients of iterated exponentials

Réf. SMA 11 353 45. PRV A32 2342 85.

HIS2 A1765 Recouplements

HIS1 N1882 exponentielle

$$-\ln(1 + \ln(1 + \ln(1 + \ln(1 + \ln(1 + \ln(1 + \ln(1 - z))))))) + 1$$

1, 1, 7, 77, 1155, 21973, 506989, 13761937, 429853851, 15192078027,  
599551077881, 26140497946017, 1248134313062231, 64783855286002573

### Number of comparisons for merge sort of n elements

Réf. AMM 66 389 59. WE71 207. KN1 3 187.

HIS2 A1768 Approximants de Padé

HIS1 N0954 Fraction rationnelle

$$\frac{(z + 1) (z^6 - z^3 + z + 1) (z^2 - z + 1)}{(z - 1)^2}$$

0, 1, 3, 5, 7, 10, 13, 16, 19, 22, 26, 30, 34, 38, 42, 46, 50, 54, 58, 62, 66, 71,  
76, 81, 86, 91, 96, 101, 106, 111, 116, 121, 126

**Lah numbers**

Réf. R1 44. C1 156.

HIS2 A1777 Dérivée logarithmique

HIS1 N2267 exponentielle

$$\frac{5z^4 + 40z^3 + 60z^2 + 20z + 1}{(z-1)^{10}}$$

1, 30, 630, 11760, 211680, 3810240, 69854400, 1317254400, 25686460800,  
519437318400, 10908183686400, 237996734976000, 5394592659456000

**Lah numbers**

Réf. R1 44. C1 156.

HIS2 A1778 Dérivée logarithmique

HIS1 N2297 exponentielle

$$\frac{6z^5 + 75z^4 + 200z^3 + 150z^2 + 30z + 1}{(z-1)^{12}}$$

1, 42, 1176, 28224, 635040, 13970880, 307359360, 6849722880,  
155831195520, 3636061228800, 87265469491200, 2157837063782400,  
55024845126451200

**Réf.** PRSE 62 190 46. BIO 46 422 59. AS1 796.

**HIS2** A1787      Approximants de Padé

**HIS1** N1398      Fraction rationnelle

$$\frac{1}{(1 - 2z)^2}$$

1, 4, 12, 32, 80, 192, 448, 1024, 2304, 5120, 11264, 24576, 53248, 114688,  
245760, 524288, 1114112, 2359296, 4980736, 10485760, 22020096,  
46137344

**Réf.** PRSE 62 190 46. AS1 796. MFM 74 62 70.

**HIS2** A1788      Approximants de Padé

**HIS1** N1729      Fraction rationnelle

$$\frac{1}{(1 - 2z)^3}$$

1, 6, 24, 80, 240, 672, 1792, 4608, 11520, 28160, 67584, 159744, 372736,  
860160, 1966080, 4456448, 10027008, 22413312, 49807360, 110100480,  
242221056

**Réf.** PRSE 62 190 46. AS1 796. MFM 74 62 70.

**HIS2** A1789      Approximants de Padé

**HIS1** N1916      Fraction rationnelle

$$\frac{1}{(1 - 2z)^4}$$

1, 8, 40, 160, 560, 1792, 5376, 15360, 42240, 112640, 292864, 745472,  
1863680, 4587520, 11141120, 26738688, 63504384, 149422080, 348651520,  
807403520

### Binomial coefficients $C(2n, n-1)$

**Réf.** LA56 517. AS1 828. PLC 1 292 70.

**HIS2** A1791      Hypergéométrique      Suite P-récurrente

**HIS1** N1421      algébrique

$$\frac{4z}{(1 - 4z)^{1/2} (1 + (1 - 4z)^{1/2})^2}$$

1, 4, 15, 56, 210, 792, 3003, 11440, 43758, 167960, 646646, 2496144,  
9657700, 37442160, 145422675, 565722720, 2203961430, 8597496600,  
33578000610

**Réf.** PRSE 62 190 46. AS1 795.

**HIS2** A1792      Approximants de Padé

**HIS1** N1100      Fraction rationnelle

$$\frac{4z - 3}{(1 - 2z)^2}$$

3, 8, 20, 48, 112, 256, 576, 1280, 2816, 6144, 13312, 28672, 61440, 131072,  
278528, 589824, 1245184, 2621440, 5505024, 11534336, 24117248,  
50331648

### **Coefficients of Chebyshev polynomials**

**Réf.** PRSE 62 190 46. AS1 795.

**HIS2** A1793      Approximants de Padé

**HIS1** N1591      Fraction rationnelle

$$\frac{1 - z}{(1 - 2z)^3}$$

1, 5, 18, 56, 160, 432, 1120, 2816, 6912, 16640, 39424, 92160, 212992,  
487424, 1105920, 2490368, 5570560

## Coefficients of Chebyshev polynomials

**Réf.** PRSE 62 190 46. AS1 795.

**HIS2** A1794      Approximants de Padé

**HIS1** N1859      Fraction rationnelle

$$\frac{1 - z}{(1 - 2z)^4}$$

1, 7, 32, 120, 400, 1232, 3584, 9984, 26880, 70400, 180224, 452608,  
1118208, 2723840, 6553600

**Réf.** AS1 799.

**HIS2** A1804      Dérivée logarithmique      Suite P-récurrente

**HIS1** N0834      exponentielle

$$a(n) = (n + 7) a(n-1) - (4n + 6) a(n-2) + (2n - 2) a(n-3)$$

$$\frac{z(z + 2)}{(1 - z)^4}$$

2, 18, 144, 1200, 10800, 105840, 1128960, 13063680, 163296000,  
2195424000, 31614105600, 485707622400, 7933224499200,  
137305808640000, 2510734786560000



**Coefficients of Laguerre polynomials**

Réf. AS1 799.

HIS2 A1805

Hypergéométrique

f.g. exponentielle

HIS1 N1794

Fraction rationnelle

$$\frac{2z(z^2 + 6z + 3)}{(z-1)^6}$$

6, 96, 1200, 14400, 176400, 2257920, 30481920, 435456000, 6586272000,  
105380352000

**Coefficients of Laguerre polynomials**

Réf. AS1 799.

HIS2 A1806

Hypergéométrique

f.g. exponentielle

HIS1 N2242

Fraction rationnelle

$$\frac{6z(4 + 18z + 12z^2 + z^3)}{(z-1)^8}$$

24, 600, 10800, 176400, 2822400, 45722880, 762048000, 13172544000,  
237105792000

### Coefficients of Laguerre polynomials

Réf. AS1 799.

**HIS2** A1807      Hypergéométrique      f.g. exponentielle

**HIS1** N2337      Fraction rationnelle

$$\frac{24 (5 + 40 z + 60 z^2 + 20 z^3 + z^4) z}{(z - 1)^{10}}$$

120, 4320, 105840, 2257920, 45722880, 914457600, 18441561600,  
379369267200

### Coefficients of Laguerre polynomials

Réf. LA56 519. AS1 799.

**HIS2** A1809      Hypergéométrique      f.g. exponentielle

**HIS1** N1989      Fraction rationnelle

$$\frac{z (2 + z)}{2 (z - 1)^4}$$

1, 9, 72, 600, 5400, 52920, 564480, 6531840, 81648000, 1097712000,  
15807052800

### Coefficients of Laguerre polynomials

Réf. LA56 519. AS1 799.

**HIS2** A1810      Hypergéométrique      f.g. exponentielle

**HIS1** N2163      Fraction rationnelle

$$\frac{(z^2 + 6z + 3)z}{3(z-1)^6}$$

1, 16, 200, 2400, 29400, 376320, 5080320, 72576000, 1097712000,  
17563392000

### Coefficients of Laguerre polynomials

Réf. LA56 519. AS1 799.

**HIS2** A1811      Hypergéométrique      f.g. exponentielle

**HIS1** N2253      Fraction rationnelle

$$\frac{z(18z^2 + 4z + 12z^2 + z^3)}{4(z-1)^8}$$

1, 25, 450, 7350, 117600, 1905120, 31752000, 548856000, 9879408000

### Coefficients of Laguerre polynomials

Réf. LA56 519. AS1 799.

**HIS2** A1812      Hypergéométrique      f.g. exponentielle

**HIS1** N2289      Fraction rationnelle

$$\frac{(40z^4 + 60z^2 + 20z^3 + 5)z}{5(z-1)^{10}}$$

1, 36, 882, 18816, 381024, 7620480, 153679680, 3161410560

### Produit des nombres impairs : 1.3.5.7. ... x (2^n)

Réf. MOC 3 168 48.

**HIS2** A1813      Hypergéométrique      Suite P-récurrente

**HIS1** N0808      algébrique      f.g. exponentielle

$$\frac{2z}{1 + (1 - 4z)^{1/2}}$$

1, 2, 12, 120, 1680, 30240, 665280, 17297280, 518918400, 17643225600,  
670442572800, 28158588057600, 1295295050649600, 64764752532480000

### Coefficients of Hermite polynomials

Réf. MOC 3 168 48.

HIS2 A1814

Hypergéométrique

Suite P-récurrente

HIS1 N2088

algébrique

f.g. exponentielle

$$\frac{(1 + 2z)}{(1 - 4z)^{5/2}}$$

12, 180, 3360, 75600, 1995840, 60540480, 2075673600, 79394515200,  
3352212864000, 154872234316800, 7771770303897600,  
420970891461120000

Réf. AS1 801.

HIS2 A1815

Approximants de Padé

HIS1 N0799

Fraction rationnelle

$$\frac{2z}{(1 - 2z)^3}$$

0, 2, 12, 48, 160, 480, 1344, 3584, 9216, 23040, 56320, 135168, 319488,  
745472, 1720320, 3932160, 8912896, 20054016, 44826624, 99614720,  
220200960, 484442112, 1061158912

## Coefficients of Hermite polynomials

Réf. AS1 801.

**HIS2** A1816      Approximants de Padé

**HIS1** N2078      Fraction rationnelle

$$\frac{12}{(1 - 2z)^5}$$

12, 120, 720, 3360, 13440, 48384, 161280, 506880, 1520640

Réf. RCI 217.

**HIS2** A1818      hypergéométrique      Suite P-récurrente

**HIS1** N1997      intégrales elliptiques      double exponentielle

$${}_2F_1\left(\left[\frac{1}{2}, \frac{1}{2}\right], [1], 4z\right) - 1$$

1, 9, 225, 11025, 893025, 108056025, 18261468225, 4108830350625,  
1187451971330625, 428670161650355625, 189043541287806830625

### Central factorial numbers

Réf. RCI 217.

**HIS2** A1823      Approximants de Padé

**HIS1** N1998      Fraction rationnelle

$$\frac{9 + 196z + 350z^2 + 84z^3 + z^4}{(1 - z)^7}$$

9, 259, 1974, 8778, 28743, 77077, 179452, 375972, 725781, 1312311,  
2249170, 3686670, 5818995, 8892009, 13211704, 19153288, 27170913,  
37808043

Réf. EUL (1) 1 375 11. MMAG 40 78 67.

**HIS2** A1834      Approximants de Padé

**HIS1** N1598      Fraction rationnelle

$$\frac{1 + z}{1 - 4z + z^2}$$

1, 5, 19, 71, 265, 989, 3691, 13775, 51409, 191861, 716035, 2672279,  
9973081, 37220045, 138907099, 518408351, 1934726305, 7220496869,  
26947261171

**Réf.** EUL (1) 1 375 11. MMAG 40 78 67.

**HIS2** A1835      Approximants de Padé

**HIS1** N1160      Fraction rationnelle

$$\frac{1 - 3z}{1 - 4z + z^2}$$

1, 1, 3, 11, 41, 153, 571, 2131, 7953, 29681, 110771, 413403, 1542841,  
5757961, 21489003, 80198051, 299303201, 1117014753, 4168755811,  
15558008491

**Réf.** TI68 126 (divided by 2).

**HIS2** A1840      Approximants de Padé

**HIS1** N0233      Fraction rationnelle

$$\frac{1}{(z^2 + z + 1)(1 - z)^3}$$

1, 2, 3, 5, 7, 9, 12, 15, 18, 22, 26, 30, 35, 40, 45, 51, 57, 63, 70, 77, 84, 92,  
100, 108, 117, 126, 135, 145, 155, 165, 176, 187, 198, 210, 222, 234, 247,  
260, 273, 287, 301



### Related to Zarankiewicz's problem

Réf. TI68 126.

**HIS2** A1841      Approximants de Padé      Conjecture

**HIS1** N0977      Fraction rationnelle

$$\frac{2z^4 + z^5 + 2z^3 + 2z^2 + 2z + 3}{(1 - z + z^2)(z^2 + z + 1)(1 + z)^2(1 - z)^3}$$

3, 5, 10, 14, 21, 26, 36, 43, 55, 64, 78, 88, 105, 117, 136, 150, 171, 186, 210, 227, 253, 272, 300, 320, 351, 373, 406, 430, 465, 490, 528, 555, 595, 624, 666, 696, 741

### Centered square numbers

Réf. MMAG 35 162 62. SIAR 12 277 70. INOC 24 4550 85.

**HIS2** A1844      Approximants de Padé

**HIS1** N1567      Fraction rationnelle

$$\frac{(1 + z)^2}{(1 - z)^3}$$

1, 5, 13, 25, 41, 61, 85, 113, 145, 181, 221, 265, 313, 365, 421, 481, 545, 613, 685, 761, 841, 925, 1013, 1105, 1201, 1301, 1405, 1513, 1625, 1741, 1861, 1985, 2113, 2245

**Réf.** SIAR 12 277 70. C1 81.

**HIS2** A1845      Approximants de Padé

**HIS1** N1844      Fraction rationnelle

$$\frac{(1+z)^3}{(z-1)^4}$$

1, 7, 25, 63, 129, 231, 377, 575, 833, 1159, 1561, 2047, 2625, 3303, 4089,  
4991, 6017, 7175, 8473, 9919, 11521, 13287, 15225, 17343, 19649, 22151,  
24857, 27775

**Réf.** SIAR 12 277 70. C1 81.

**HIS2** A1846      Approximants de Padé

**HIS1** N1974      Fraction rationnelle

$$\frac{(1+z)^4}{(z-1)^5}$$

1, 9, 41, 129, 321, 681, 1289, 2241, 3649, 5641, 8361, 11969, 16641, 22569,  
29961, 39041, 50049, 63241, 78889, 97281, 118721, 143529, 172041,  
204609, 241601

**Réf.** SIAR 12 277 70. C1 81.

**HIS2** A1847      Approximants de Padé

**HIS1** N2045      Fraction rationnelle

$$\frac{(1 + z)^5}{(z - 1)^6}$$

1, 11, 61, 231, 681, 1683, 3653, 7183, 13073, 22363, 36365, 56695, 85305,  
124515, 177045, 246047, 335137, 448427, 590557, 766727, 982729,  
1244979, 1560549

**Réf.** SIAR 12 277 70. C1 81.

**HIS2** A1848      Approximants de Padé

**HIS1** N2102      Fraction rationnelle

$$\frac{(1 + z)^6}{(z - 1)^7}$$

1, 13, 85, 377, 1289, 3653, 8989, 19825, 40081, 75517, 134245, 227305,  
369305, 579125, 880685, 1303777, 1884961, 2668525, 3707509, 5064793,  
6814249

Réf. SIAR 12 277 70. C1 81.

**HIS2** A1849      Approximants de Padé

**HIS1** N2139      Fraction rationnelle

$$\frac{(1 + z)^7}{(z - 1)^8}$$

1, 15, 113, 575, 2241, 7183, 19825, 48639, 108545, 224143, 433905, 795455,  
1392065, 2340495, 3800305, 5984767, 9173505, 13726991, 20103025,  
28875327

Réf. SIAR 12 277 70.

**HIS2** A1850      Dérivée logarithmique

**HIS1** N1184      algébrique

$C(n,k).C(n+k,k)$ ,  $k=0\dots n$

$$\frac{1}{(1 - 6z + z^2)^{1/2}}$$

1, 3, 13, 63, 321, 1683, 8989, 48639, 265729, 1462563, 8097453, 45046719,  
251595969, 1409933619, 7923848253, 44642381823, 252055236609,  
1425834724419

### Series-reduced planted trees with $n$ nodes, $n-3$ endpoints

Réf. jr.

**HIS2** A1859      Approximants de Padé

**HIS1** N0531      Fraction rationnelle

$$\frac{1 + z^2 + 2z^3 - z^4}{(1+z)(1-z)^3}$$

1, 2, 5, 10, 16, 24, 33, 44, 56, 70, 85, 102, 120, 140, 161, 184, 208, 234, 261, 290, 320, 352, 385, 420, 456, 494, 533, 574, 616, 660, 705, 752, 800, 850, 901, 954, 1008, 1064, 1121, 1180

### Series-reduced planted trees with $n$ nodes, $n-4$ endpoints

Réf. jr.

**HIS2** A1860      Approximants de Padé

**HIS1** N1171      Fraction rationnelle

$$\frac{3 + 3z + 2z^2}{(z^2 + z + 1)(z - 1)^4}$$

3, 12, 29, 57, 99, 157, 234, 333, 456, 606, 786, 998, 1245

### Values of Bell polynomials

Réf. jr. PSPM 19 173 71.

**HIS2** A1861 équations différentielles Formule de B. Salvy

**HIS1** N0653 exponentielle

$$\exp(2 \exp(z) - 2)$$

1, 2, 6, 22, 94, 454, 2430, 14214, 89918, 610182, 4412798

### Convolved Fibonacci numbers

Réf. RCI 101. FQ 15 118 77.

**HIS2** A1872 Dérivée logarithmique

**HIS1** N1413 Fraction rationnelle

$$\frac{1}{(1 - z - z^2 - z^4)}$$

1, 4, 14, 40, 105, 256, 594, 1324, 2860, 6020, 12402, 25088

### Convolved Fibonacci numbers

Réf. RCI 101. FQ 15 118 77. DM 26 267 79.

**HIS2** A1873 Dérivée logarithmique

**HIS1** N1600 Fraction rationnelle

$$\frac{1}{(1 - z - z^2)}$$

1, 5, 20, 65, 190, 511, 1295, 3130, 7285, 16435, 36122, 77645, 163730, 339535

### Convolved Fibonacci numbers

Réf. RCI 101.

**HIS2** A1874 Dérivée logarithmique erreurs dans la suite

**HIS1** N1738 Fraction rationnelle corrigées par la formule

$$\frac{1}{(1 - z - z^2)}$$

1, 6, 27, 98, 315, 924, 2534, 6588, 16407, 39430, 91959, 209034, 464723, 1013292, 2171850, 4584620, 9546570, 19635840, 39940460, 80421600, 160437690, 317354740, 622844730, 1213580820

### Convolved Fibonacci numbers

Réf. RCI 101. DM 26 267 79.

**HIS2** A1875 Dérivée logarithmique

**HIS1** N1865 Fraction rationnelle

$$\frac{1}{(1 - z - z^2)}$$

1, 7, 35, 140, 490, 1554, 4578, 12720, 33705, 85855, 211519

Réf. RCI 77.

**HIS2** A1879 Hypergéométrique Suite P-récurrente

**HIS1** N1775 algébrique f.g. exponentielle

$a(n) = (2n + 2) a(n-1) + (-2n + 3) a(n-2)$

$$\frac{z}{(1 - 2z)}$$

1, 6, 45, 420, 4725, 62370, 945945, 16216200, 310134825, 6547290750,  
151242416325, 3794809718700, 102776096548125, 2988412653476250,  
92854250304440625



**Coefficients of Bessel polynomials  $y_n(x)$** 

Réf. RCI 77.

HIS2 A1880

Tableaux généralisés f.g. exponentielle

HIS1 N2146

algébrique

$$\frac{z(2+z)}{2(1-2z)^{7/2}}$$

1, 15, 210, 3150, 51975, 945945, 18918900

**Coefficients of Bessel polynomials  $y_n(x)$** 

Réf. RCI 77.

HIS2 A1881

Tableaux généralisés f.g. exponentielle

HIS1 N2217

algébrique

$$\frac{z(2+3z)}{2(1-2z)^{9/2}}$$

1, 21, 378, 6930, 135135, 2837835

Réf. AMM 72 1024 65.

HIS2 A1882 Approximants de Padé

HIS1 N0273 Fraction rationnelle

$$\frac{2 + 3z - 3z^2 - z^3}{1 - 4z + 2z^4}$$

2, 3, 5, 11, 16, 38, 54, 130, 184, 444, 628, 1516, 2144, 5176, 7320, 17672, 24992, 60336, 85328, 206000, 291328, 703328, 994656, 2401312, 3395968, 8198592

### Hit polynomials

Réf. RI63.

HIS2 A1891 Approximants de Padé

HIS1 N1365 Fraction rationnelle

$$\frac{z(1+z)}{(1-z-z^2)(z-1)^2}$$

0, 1, 4, 10, 21, 40, 72, 125, 212

### Bisection of Fibonacci sequence

Réf. IDM 22 23 15. PLMS 21 729 70. FQ 9 283 71.

HIS2 A1906 Approximants de Padé

HIS1 N1101 Fraction rationnelle

$$\frac{1}{1 - 3z + z^2}$$

1, 3, 8, 21, 55, 144, 377, 987, 2584, 6765, 17711, 46368, 121393, 317811,  
832040, 2178309, 5702887, 14930352, 39088169, 102334155, 267914296,  
701408733

### Permutations with no cycles of length 4

Réf. R1 83.

HIS2 A1907 Dérivée logarithmique

HIS1 N1261 exponentielle

$a(n) = (4n - 5) a(n-1) + (4n - 8) a(n-2)$

$$\frac{1}{(1 - 4z) \exp(z)}$$

1, 3, 25, 299, 4785, 95699, 2296777, 64309755, 2057912161, 74084837795,  
2963393511801, 130389314519243, 6258687096923665,  
325451729040030579

**Réf.** R1 83.

**HIS2** A1908      Dérivée logarithmique      Suite P-récurrente

**HIS1** N1500      exponentielle

$$a(n) = (5n - 6) a(n-1) + (5n - 10) a(n-2)$$

$$1$$

---


$$(1 - 5z) \exp(z)$$

1, 4, 41, 614, 12281, 307024, 9210721, 322375234, 12895009361,  
580275421244, 29013771062201, 1595757408421054, 95745444505263241

**Réf.** R1 188.

**HIS2** A1909      Dérivée logarithmique

**HIS1** N1450      exponentielle

$$a(n) = (n + 2) a(n-1) + (n - 2) a(n-2)$$

$$1$$

---


$$5$$

$$(1 - z) \exp(z)$$

0, 1, 4, 21, 134, 1001, 8544, 81901, 870274, 10146321, 128718044,  
1764651461, 25992300894, 409295679481, 6860638482424,  
121951698034461

**Réf.** R1 188.

**HIS2** A1910 Dérivée logarithmique

**HIS1** N1637 exponentielle

$$a(n) = (n + 3) a(n-1) + (n-2) a(n-2)$$

$$\frac{1}{(1 - z)^6 \exp(z)}$$

0, 1, 5, 31, 227, 1909, 18089, 190435, 2203319, 27772873, 378673901,  
5551390471, 87057596075, 1453986832381, 25762467303377,  
482626240281739

**Réf.** R1 233. LNM 748 151 79.

**HIS2** A1911 Approximants de Padé

**HIS1** N1007 Fraction rationnelle

$$\frac{1 + z}{(1 - z) (1 - z - z^2)}$$

1, 3, 6, 11, 19, 32, 53, 87, 142, 231, 375, 608, 985, 1595, 2582, 4179, 6763,  
10944, 17709, 28655, 46366, 75023, 121391, 196416, 317809, 514227,  
832038, 1346267

**Quadrinomial coefficients****Réf.** JCT 1 372 66. C1 78.**HIS2** A1919      Approximants de Padé**HIS1** N1769      Fraction rationnelle

$$\frac{3z^2 - 8z + 6}{(z - 1)^8}$$

6, 40, 155, 456, 1128, 2472, 4950, 9240, 16302, 27456, 44473, 69680,  
 106080, 157488, 228684, 325584, 455430, 627000, 850839, 1139512,  
 1507880, 1973400, 2556450, 3280680

**Réf.** AMM 53 465 46.**HIS2** A1921      Approximants de Padé**HIS1** N1885      Fraction rationnelle

$$\frac{z(z - 7)}{(z - 1)(1 - 14z + z^2)}$$

0, 7, 104, 1455, 20272, 282359, 3932760, 54776287, 762935264,  
 10626317415, 148005508552, 2061450802319, 28712305723920,  
 399910829332567

**Réf.** AMM 53 465 46.

**HIS2** A1922 Approximants de Padé

**HIS1** N1946 Fraction rationnelle

$$\frac{7z - 1}{(z - 1)(1 - 14z + z^2)}$$

1, 8, 105, 1456, 20273, 282360, 3932761, 54776288, 762935265,  
10626317416, 148005508553, 2061450802320, 28712305723921,  
399910829332568

### From rook polynomials

**Réf.** SMA 20 18 54.

**HIS2** A1924 Approximants de Padé

**HIS1** N1053 Fraction rationnelle

$$\frac{1}{(1 - z - z^2)(z - 1)^2}$$

1, 3, 7, 14, 26, 46, 79, 133, 221, 364, 596, 972, 1581, 2567, 4163, 6746,  
10926, 17690, 28635, 46345, 75001, 121368, 196392, 317784, 514201,  
832011, 1346239

### From rook polynomials

Réf. SMA 20 18 54.

**HIS2** A1925 Approximants de Padé

**HIS1** N1724 Fraction rationnelle

$$\frac{1 + z}{(1 - z - z^2)(z - 1)^3}$$

1, 6, 22, 64, 162, 374, 809, 1668, 3316, 6408, 12108, 22468, 41081, 74202, 132666, 235160, 413790, 723530, 1258225, 2177640, 3753096, 6444336, 11028792

### From rook polynomials

Réf. SMA 20 18 54.

**HIS2** A1926 Approximants de Padé

**HIS1** N1978 Fraction rationnelle

$$\frac{(1 + z)^2}{(1 - z - z^2)(z - 1)^4}$$

1, 9, 46, 177, 571, 1632, 4270, 10446, 24244, 53942, 115954, 242240, 494087, 987503, 1939634, 3753007, 7167461, 13532608, 25293964, 46856332, 86110792



### Sum of Fibonacci and Pell numbers

Réf.

**HIS2** A1932      Approximants de Padé  
**HIS1** N0319      Fraction rationnelle

$$\frac{(2 + z)(1 - 2z)}{(1 - z - z^2)(1 - 2z - z^2)}$$

2, 3, 7, 15, 34, 78, 182, 429, 1019, 2433, 5830, 14004, 33694, 81159, 195635,  
 471819, 1138286, 2746794, 6629290, 16001193, 38624911, 93240069,  
 225087338

### Coefficients of an elliptic function

Réf. CAY 9 128.

**HIS2** A1934      Euler  
**HIS1** N1397      Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 4, 2, 4, 2, 4, 2, 4, 2, 4, 2, \dots$$

1, 4, 12, 32, 76, 168, 352, 704

### Coefficients of an elliptic function

Réf. CAY 9 128.

HIS2 A1935

Euler

HIS1 N0204

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, 2, 3 \pmod{4}$$

1, 1, 2, 3, 4, 6, 9, 12, 16, 22, 29, 38, 50, 64, 82, 105, 132, 166, 208, 258, 320, 395, 484, 592, 722, 876, 1060

### Coefficients of an elliptic function

Réf. CAY 9 128. MOC 29 852 75.

HIS2 A1936

Euler

HIS1 N0532

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 2, 2, 0, 2, 2, 2, 0, \dots$$

1, 2, 5, 10, 18, 32, 55, 90, 144, 226, 346, 522, 777, 1138, 1648, 2362, 3348, 4704, 6554, 9056, 12425, 16932, 22922, 30848, 41282, 54946, 72768, 95914, 125842, 164402

### Coefficients of an elliptic function

Réf. CAY 9 128.

HIS2 A1937

Euler

erreurs dans la suite corrigées avec  
la formule.

HIS1 N1120

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 3, 3, 3, 0, 3, 3, 3, 0, \dots$$

1, 3, 9, 22, 48, 99, 194, 363, 657, 1155, 1977, 3312, 5443, 8787, 13968,  
21894, 33873, 51795, 78345, 117412, 174033, 255945

### Coefficients of an elliptic function

Réf. CAY 9 128.

HIS2 A1938

Euler

HIS1 N1412

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 4, 4, 4, 0, 4, 4, 4, 0, \dots$$

1, 4, 14, 40, 101, 236, 518, 1080, 2162, 4180, 7840, 14328, 25591, 44776,  
76918, 129952, 216240, 354864, 574958

**Coefficients of an elliptic function**

Réf. CAY 9 128.

HIS2 A1939

Euler

HIS1 N1599

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 5, 5, 5, 0, 5, 5, 5, 0, \dots$$

1, 5, 20, 65, 185, 481, 1165, 2665, 5820, 12220, 24802, 48880, 93865,  
176125, 323685, 583798, 1035060, 1806600, 3108085

**Coefficients of an elliptic function**

Réf. CAY 9 128.

HIS2 A1940

Euler

erreurs dans la suite corrigées avec  
la formule.

HIS1 N1737

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 6, 6, 6, 0, 6, 6, 6, 0, \dots$$

1, 6, 27, 98, 309, 882, 2330, 5784, 13644, 30826, 67107, 141444, 289746,  
578646, 1129527, 2159774, 4052721, 7474806, 15063859

### Coefficients of an elliptic function

Réf. CAY 9 128.

HIS2 A1941

Euler

HIS1 N1864

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 7, 7, 7, 0, 7, 7, 7, 0, \dots$$

1, 7, 35, 140, 483, 1498, 4277, 11425, 28889, 69734, 161735, 362271, 786877, 1662927, 3428770, 6913760, 13660346, 26492361, 50504755

Réf. JLMS 8 166 33.

HIS2 A1945

Approximants de Padé

HIS1 N1525

Fraction rationnelle

$$\frac{z \left( 1 + 2z + z^2 + 2z^3 + z^4 \right)}{(z^3 - z - 1) \left( -1 + z^2 + z^3 \right)}$$

0, 1, 1, 1, 5, 1, 7, 8, 5, 19, 11, 23, 35, 27, 64, 61, 85, 137, 133, 229, 275, 344, 529, 599, 875, 1151, 1431, 2071, 2560, 3481, 4697, 5953, 8245, 10649, 14111, 19048, 24605

**Réf.** RCI 139.

**HIS2** A1946      Approximants de Padé

**HIS1** N0794      Fraction rationnelle

$$\frac{11z - 2}{z^2 + 11z - 1}$$

2, 11, 123, 1364, 15127, 167761, 1860498, 20633239, 228826127,  
2537720636, 28143753123, 312119004989, 3461452808002,  
38388099893011

### Related to Bernoulli numbers

**Réf.** RCI 141.

**HIS2** A1947      Approximants de Padé

**HIS1** N1265      Fraction rationnelle

$$\frac{4z - 3}{z^2 + 11z - 1}$$

3, 29, 322, 3571, 39603, 439204, 4870847, 54018521, 599074578,  
6643838879, 73681302247, 817138163596, 9062201101803,  
100501350283429

### A probability difference equation

Réf. AMM 32 369 25.

HIS2 A1949 Approximants de Padé

HIS1 N0430 Fraction rationnelle

$$\frac{1}{(1-z) (1-z-z^2-z^3-z^4-z^5)}$$

1, 2, 4, 8, 16, 32, 63, 124, 244, 480, 944, 1856, 3649, 7174, 14104, 27728, 54512, 107168, 210687, 414200, 814296, 1600864, 3147216, 6187264, 12163841

### Restricted partitions

Réf. CAY 2 277.

HIS2 A1971 Approximants de Padé

HIS1 N0227 Fraction rationnelle

$$\frac{1-z^6}{(1-z) (1-z^2) (1-z^3) (1-z^4)}$$

1, 1, 2, 3, 5, 6, 8, 10, 13, 15, 18, 21, 25, 28, 32, 36, 41, 45, 50

### Restricted partitions

Réf. CAY 2 277.

HIS2 A1972 Approximants de Padé

HIS1 N0199 Fraction rationnelle

$$\frac{2 - z + z^3 - 2z^4 + z^5}{(1+z)(1+z^2)(z-1)^3}$$

2, 3, 4, 6, 8, 10, 12, 15, 18, 21, 24, 28, 32, 36, 40, 45, 50

Réf. CAY 2 278.

HIS2 A1973 Approximants de Padé

HIS1 N0969 Fraction rationnelle

$$\frac{1 - z + z^2}{(1+z)(z^2 + z + 1)(z-1)^4}$$

1, 1, 3, 5, 8, 12, 18, 24, 33, 43, 55, 69, 86, 104, 126, 150, 177, 207, 241, 277, 318, 362, 410, 462, 519, 579, 645, 715, 790, 870, 956, 1046, 1143, 1245, 1353, 1467, 1588, 1714, 1848, 1988



### Expansion of a generating function

Réf. CAY 10 414.

HIS2 A1993

Euler

HIS1 N0973

Fraction rationnelle

$$\frac{1}{(1-z)(1-z^2)^2(1-z^3)^2(1-z^4)}$$

1, 1, 3, 5, 9, 13, 22, 30, 45, 61, 85, 111

### Expansion of a generating function

Réf. CAY 10 415.

HIS2 A1994

Euler

HIS1 N0927

Fraction rationnelle

$$\frac{1}{(1-z)(1-z^2)^2(1-z^3)(1-z^4)^2(1-z^5)}$$

1, 1, 3, 4, 8, 11, 18, 24, 36, 47, 66, 84, 113, 141, 183, 225, 284, 344, 425, 508, 617, 729, 872, 1020, 1205, 1397, 1632, 1877, 2172, 2480, 2846, 3228, 3677

### Expansion of a generating function

Réf. CAY 10 415.

HIS2 A1996

Euler

HIS1 N0112

Fraction rationnelle

$$1$$

$$\frac{1}{(1-z)^2 (1-z)^3 (1-z)^4 (1-z)^5 (1-z)^6 (1-z)^7}$$

1, 0, 1, 1, 2, 2, 4, 4, 6, 7, 10, 11, 16, 17, 23, 26, 33, 37, 47, 52, 64, 72, 86, 96, 115, 127, 149, 166, 192, 212, 245, 269, 307, 338, 382, 419, 472, 515, 576, 629, 699, 760, 843, 913

### Folding a piece of wire of length n

Réf. AMM 44 51 37. GMJ 15 146 74.

HIS2 A1998

Approximants de Padé

HIS1 N0468

Fraction rationnelle

$$3z^4 - 8z^3 + 2z^2 + 3z - 1$$

$$\frac{1}{(z-1)(3z-1)(3z^2-1)}$$

1, 1, 2, 4, 10, 25, 70, 196, 574, 1681, 5002, 14884, 44530, 133225, 399310, 1196836, 3589414, 10764961, 32291602, 96864964, 290585050, 871725625, 2615147350

Réf. AMM 43 29 36.

**HIS2** A2002 LLL suite P-récurrente

**HIS1** N1621 algébrique

$$n a(n) = (7n - 5) a(n - 1) + (-7n + 16) a(n - 2) + (n - 3) a(n - 3)$$

$$a(n) = \sum_{k=0}^{n-1} C(n, k+1) \cdot C(n+k, k), k=0..n-1$$

$$\frac{z^2 + (1 - 6z + z^2)^{1/2} - 1}{-2(1 - 6z + z^2)^{1/2} z}$$

1, 5, 25, 129, 681, 3653, 19825, 108545, 598417, 3317445, 18474633,  
103274625, 579168825, 3256957317

Réf. AMM 43 29 36.

**HIS2** A2003 LLL Suite P-récurrente

**HIS1** N0735 algébrique

$$n a(n) = (5n - 1) a(n - 1) + (5n - 14) a(n - 2) + (-n + 3) a(n - 3)$$

$$a(n) = 2 \sum_{k=0}^{n-1} C(n-1, k) C(n+k, k), k = 0 ..n-1$$

$$\frac{z^2 + 1 + (1 - 6z + z^2)^{1/2}}{-2(1 - 6z + z^2)^{1/2} z}$$

2, 8, 38, 192, 1002, 5336, 28814, 157184, 864146, 4780008, 26572086,  
148321344, 830764794, 4666890936



### Related to partitions

Réf. AMM 76 1036 69.

**HIS2** A2040      Approximants de Padé

**HIS1** N0442      Fraction rationnelle

$$\frac{1}{1 - \frac{2z}{1 - \frac{5z}{1 - \frac{7z}{1 - \frac{6z}{1 - \frac{4z}{1 - \frac{2z}{1 - \frac{1z}{1}}}}}}}}$$

1, 2, 4, 8, 21, 52, 131, 316, 765, 1846, 4494

Réf. AMM 3 244 1896.

**HIS2** A2041      Approximants de Padé

**HIS1** N1759      Fraction rationnelle

$$\frac{1}{(z - 1)(1 + 2z)(1 - 2z)(5z - 1)}$$

1, 6, 35, 180, 921, 4626, 23215, 116160, 581141, 2906046, 14531595,  
72659340, 363302161, 1816516266, 9082603175, 45413037720,  
227065275981, 1135326467286

### Simplices in barycentric subdivisions of n-simplex

Réf. SKA 11 95 28. MMAG 37 132 64.

HIS2 A2050 Recoupements

HIS1 N1622 exponentielle

$$\frac{\exp(z) (1 - \exp(z))}{\exp(z) - 2}$$

1, 5, 25, 149, 1081, 9365, 94585, 1091669, 14174521, 204495125,  
3245265145, 56183135189, 1053716696761, 21282685940885,  
460566381955705

### Binomial coefficients C(2n+1,n-1)

Réf. CAY 13 95. AS1 828.

HIS2 A2054 Hypergéométrique Suite P-récurrente

HIS1 N1607 algébrique

${}_2F_1([2, 5/2], [4], 4z)$

$$\frac{8z}{(1-4z)^{1/2} (1+(1-4z)^{1/2})^3}$$

1, 5, 21, 84, 330, 1287, 5005, 19448, 75582, 293930, 1144066, 4457400,  
17383860, 67863915, 265182525, 1037158320, 4059928950, 15905368710

### Dissections of a polygon by number of parts

Réf. CAY 13 95. AEQ 18 385 78.

**HIS2** A2055          Hypergéométrique          Suite P-récurrente

**HIS1** N1982          algébrique

$$\frac{(z - (1 - 4z)^{1/2})z}{(1 + (1 - 4z)^{1/2})^4 (1 - 4z)^{3/2}}$$

1, 9, 56, 300, 1485, 7007, 32032, 143208, 629850, 2735810, 11767536, 50220040, 212952285

### Dissections of a polygon by number of parts

Réf. CAY 13 95. AEQ 18 385 78.

**HIS2** A2056          Hypergéométrique          simplifiée avec LLL

**HIS1** N2115          algébrique 2è degré

$$\frac{1/2 (1 - 21z + 180z^2 - 800z^3 + 1920z^4 - 2304z^5 + 1024z^6)}{(z^5 (4z - 1)^5) - ((-10z^4 - 50z^3 + 40z^2 - 11z + 1) (4z - 1)^{5/2})}$$

1, 14, 120, 825, 5005, 28028, 148512, 755820, 3730650, 17978180, 84987760, 395482815

$$4 C(2n+1, n-1)/(n+3)$$

Réf. CAY 13 95. FQ 14 397 76. DM 14 84 76.

**HIS2** A2057            Hypergéométrique

**HIS1** N1415            algébrique

${}_2F_1([2, 5/2], [5], 4z)$

$$\frac{16z}{(1 + (1 - 4z)^{1/2})^4}$$

1, 4, 14, 48, 165, 572, 2002, 7072, 25194, 90440, 326876, 1188640, 4345965, 15967980, 58929450, 218349120, 811985790, 3029594040, 11338026180, 42550029600

### Partitions of a polygon by number of parts

Réf. CAY 13 95.

**HIS2** A2059            Hypergéométrique

**HIS1** N1269            algébrique

$$\frac{(2z - 3(1 - 4z)^{1/2})z}{(1 + (1 - 4z)^{1/2})^6 (1 - 4z)^{3/2}}$$

3, 32, 225, 1320, 7007, 34944, 167076, 775200, 3517470, 15690048



### Central polygonal numbers

Réf. HO50 22. HO70 87.

**HIS2** A2061      Approximants de Padé

**HIS1** N1049      Fraction rationnelle

$$\frac{1 - 2z + 3z^2}{(1 - z)^3}$$

1, 1, 3, 7, 13, 21, 31, 43, 57, 73, 91, 111, 133, 157, 183, 211, 241, 273, 307, 343, 381, 421, 463, 507, 553, 601, 651, 703, 757, 813, 871, 931, 993, 1057, 1123, 1191, 1261

### n'th Fibonacci number + n

Réf. HO70 96.

**HIS2** A2062      Approximants de Padé

**HIS1** N0240      Fraction rationnelle

$$\frac{z(3z - 2)}{(1 - z - z^2)(1 - z)^2}$$

0, 2, 3, 5, 7, 10, 14, 20, 29, 43, 65, 100, 156, 246, 391, 625, 1003, 1614, 2602, 4200, 6785, 10967, 17733, 28680, 46392, 75050, 121419, 196445, 317839, 514258

**Cullen numbers**

Réf. SI64a 346. UPNT B20.

**HIS2** A2064      Approximants de Padé

**HIS1** N1125      Fraction rationnelle

$$\frac{1 - 2z + 2z^2}{(1 - z)^2 (2z - 1)}$$

1, 3, 9, 25, 65, 161, 385, 897, 2049, 4609, 10241, 22529, 49153, 106497,  
229377, 491521, 1048577, 2228225, 4718593, 9961473, 20971521,  
44040193, 92274689

**First differences are periodic**

Réf. TCPS 2 219 1827.

**HIS2** A2081      Approximants de Padé

**HIS1** N0426      Fraction rationnelle

$$\frac{2(1 + 2z^2 + 2z^3)}{(1 + z)^2 (z - 1)^2}$$

2, 4, 8, 16, 22, 24, 28, 36, 42, 44, 48, 56, 62, 64, 68, 76, 82, 84, 88, 96, 102,  
104, 108, 116, 122, 124, 128, 136, 142, 144, 148, 156, 162, 164, 168, 176,  
182, 184, 188, 196, 202, 204, 208, 216

### Partitions of n into non-prime parts

Réf. JNSM 9 91 69.

HIS2 A2095

Euler

HIS1 N0094

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

**c(n) = Les nombres non-premiers**

1, 1, 1, 1, 2, 2, 3, 3, 5, 6, 8, 8, 12, 13, 17, 19, 26, 28, 37, 40, 52, 58, 73, 79, 102, 113, 139, 154, 191, 210, 258, 284, 345, 384, 462, 509, 614, 679, 805, 893, 1060, 1171, 1382

### Logarithmic numbers

Réf. MAS 31 78 63. CACM 13 726 70.

HIS2 A2104

équations différentielles

Suite P-récurrente

HIS1 N1105

exponentielle

Formule de B. Salvy

$$a(n) = (n + 1) a(n-1) + (-2n + 2) a(n-2) + (n - 2) a(n-3)$$

$$- \exp(z) \ln(1 - z)$$

1, 3, 8, 24, 89, 415, 2372, 16072, 125673, 1112083, 10976184, 119481296, 1421542641, 18348340127, 255323504932, 3809950977008, 60683990530225

### The square of Euler's product

Réf. PLMS 21 190 1889.

**HIS2** A2107 Recouplements

**HIS1** N0028 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = -2, -2, -2, -2, -2, 2, \dots$$

1, 2, 1, 2, 1, 2, 2, 0, 2, 2, 1, 0, 0, 2, 3, 2, 2, 0, 0, 2, 2, 0, 0, 2, 1, 0, 2, 2, 2, 2, 1,  
2, 0, 2, 2, 2, 2, 0, 2, 0, 4, 0, 0, 0, 1, 2, 0, 0, 2, 0, 2, 2, 1, 2, 0, 2, 2, 0, 0, 2, 0, 2,  
0, 2, 2, 0, 4, 0, 0

### Numerators of convergents to exp(1)

Réf. BAT 17 1871. MOC 2 69 46.

**HIS2** A2119 équations différentielles formule de B. Salvy

**HIS1** N1880 exponentielle

$$a(n) = (4n - 6)a(n - 1) + a(n - 2)$$

$$\frac{\exp\left(\frac{1}{2} (1 - 4z)^{1/2} - \frac{1}{2}\right)}{(1 - 4z)^{1/2}}$$

1, 1, 7, 71, 1001, 18089, 398959, 10391023, 312129649, 10622799089,  
403978495031, 16977719590391, 781379079653017, 39085931702241241

### From symmetric functions

Réf. PLMS 23 314 23.

HIS2 A2124 Approximants de Padé

HIS1 N0062 Fraction rationnelle

$$\frac{1 - z^6}{1 - z^3 - z^5 - z^6 - z^7 + z^9}$$

1, 0, 0, 1, 0, 1, 1, 1, 2, 1, 3, 4, 3, 7, 7, 8, 14, 15, 21, 28, 33, 47, 58, 76, 103, 125, 169, 220, 277, 373

### From symmetric functions

Réf. PLMS 23 315 23.

HIS2 A2125 Approximants de Padé

HIS1 N0006 Fraction rationnelle

$$\frac{(1 - z^6)^2}{(1 - z^3 - z^5 - z^6 - z^7 + z^9)^2}$$

1, 0, 0, 2, 0, 2, 3, 2, 6, 4, 9, 14, 11, 26, 29, 34, 62, 68, 99, 140, 169, 252, 322, 430, 607, 764, 1059, 1424, 1845, 2546

**Réf.** CAY 9 190. PLMS 17 29 17. EMN 34 1 44. AMM 79 519 72.

**HIS2** A2135 Dérivée logarithmique

**HIS1** N0594 exponentielle

$$a(n) = (n - 1) a(n - 1) + (-1/2 n^2 + 5/2 n - 3) a(n - 3)$$

$$\frac{\exp(1/4 z (z + 2))}{(1 - z)^{1/2}}$$

1, 1, 2, 5, 17, 73, 388, 2461, 18155, 152531, 1436714, 14986879, 171453343,  
2134070335, 28708008128, 415017867707, 6416208498137,  
105630583492969

### Matrices with 2 rows

**Réf.** PLMS 17 29 17.

**HIS2** A2136 Dérivée logarithmique Suite P-récurrente

**HIS1** N0656 exponentielle

$$a(n) = n a(n - 1) + (-1/2 n^2 + 5/2 n - 3) a(n - 3)$$

$$\frac{\exp(1/4 z (z + 2))}{(1 - z)^{3/2}}$$

1, 2, 6, 23, 109, 618, 4096, 31133, 267219, 2557502

**Pell numbers****Réf.** AJM 1 187 1878. FQ 4 373 66. RI89 43.**HIS2** A2203      Approximants de Padé**HIS1** N0136      Fraction rationnelle

$$\frac{2(1-z)^2}{1-2z-z^2}$$

2, 2, 6, 14, 34, 82, 198, 478, 1154, 2786, 6726, 16238, 39202, 94642, 228486,  
 551614, 1331714, 3215042, 7761798, 18738638, 45239074, 109216786,  
 263672646

**Restricted hexagonal polyominoes with n cells****Réf.** EMS 17 11 70. rcr.**HIS2** A2212      Inverse fonctionnel      Suite P-récurrente**HIS1** N1145      algébrique

$$(n+1)a(n) = (6n-3)a(n-1) + (-5n+10)a(n-2)$$

$$\frac{-1 + 3z + (1 - 6z + 5z^2)^{1/2}}{2z}$$

1, 3, 10, 36, 137, 543, 2219, 9285, 39587, 171369, 751236, 3328218,  
 14878455, 67030785, 304036170, 1387247580, 6363044315, 29323149825,  
 135700543190

### Dissections of a polygon

Réf. DM 11 388 75.

**HIS2** A2293 Inverse fonctionnel Suite P-récurrente

**HIS1** N1454 algébrique

$$1/9 (n - 1) (3n - 4) (3n - 2) a(n) = 8/27 (4n - 5) (4n - 7) (2n - 3) a(n - 1)$$

$${}_4F_3\left(\left[1, \frac{3}{2}, \frac{5}{4}, \frac{7}{4}\right], \right. \\ \left. \left[2, \frac{5}{3}, \frac{7}{3}\right], 256z / 27\right)$$

1, 1, 4, 22, 140, 969, 7084, 53820, 420732, 3362260, 27343888, 225568798, 1882933364, 15875338990, 134993766600, 1156393243320, 9969937491420

### $C(5n,n)/(4n+1)$

Réf. DM 11 388 75.

**HIS2** A2294 Hypergéométrique Suite P-récurrente

**HIS1** N1646 algébrique

$$1/32 (4n - 5) (n - 1) (4n - 3) (2n - 3) a(n) = 5/256 (5n - 9) (5n - 8) (5n - 7) \\ (5n - 6) a(n - 1)$$

$${}_5F_4\left(\left[1, \frac{9}{5}, \frac{7}{5}, \frac{8}{5}, \frac{6}{5}\right], \right. \\ \left. \left[2, \frac{3}{2}, \frac{9}{4}, \frac{7}{4}\right], 3125z / 256\right)$$

1, 1, 5, 35, 285, 2530, 23751, 231880, 2330445, 23950355, 250543370, 2658968130, 28558343775, 309831575760, 3390416787880, 37377257159280, 414741863546285



### Dissections of a polygon

Réf. DM 11 388 75.

**HIS2** A2295            Hypergéométrique            Suite P-récurrente

**HIS1** N1780            algébrique

$1/625 (n - 1) (5n - 4) (5n - 8) (5n - 7) (5n - 6) a(n) =$   
 $72 / 3125 (3n - 5) (6n - 11) (6n - 7) (3n - 4) (2n - 3) a(n - 1)$

$${}_6F_5\left(\left[1, \frac{3}{2}, \frac{5}{3}, \frac{4}{3}, \frac{7}{6}, \frac{11}{6}\right], \left[2, \frac{11}{5}, \frac{9}{5}, \frac{7}{5}, \frac{8}{5}\right], 46656 z / 3125\right)$$

1, 1, 6, 51, 506, 5481, 62832, 749398, 9203634, 115607310, 1478314266,  
 19180049928, 251857119696, 3340843549855, 44700485049720,  
 602574657427116

### Dissections of a polygon

Réf. DM 11 389 75.

**HIS2** A2296            Hypergéométrique            Suite P-récurrente

**HIS1** N1878            algébrique

$1/648 (n - 1) (6n - 7) (3n - 4) (2n - 3) (3n - 5) (6n - 5) a(n) =$   
 $7 / 46656 (7n - 11) (7n - 10) (7n - 13) (7n - 9) (7n - 12) (7n - 8) a(n - 1)$

$${}_7F_6\left(\left[1, \frac{8}{7}, \frac{9}{7}, \frac{11}{7}, \frac{10}{7}, \frac{13}{7}, \frac{12}{7}\right], \left[2, \frac{3}{2}, \frac{5}{3}, \frac{13}{6}, \frac{4}{3}, \frac{11}{6}\right], 823543z / 46656\right)$$

1, 1, 7, 70, 819, 10472, 141778, 1997688, 28989675, 430321633,  
 6503352856, 99726673130, 1547847846090, 24269405074740,  
 383846168712104

Réf. TOH 42 152 36.

**HIS2** A2301 Dérivée logarithmique f.g. exponentielle

**HIS1** N0737 Fraction rationnelle

$$\frac{2}{(z - 1)^4}$$

2, 8, 40, 240, 1680, 13440, 120960, 1209600, 13305600, 159667200,  
2075673600, 29059430400, 435891456000, 6974263296000,  
118562476032000

### Sums of fourth powers of odd numbers

Réf. AMS 2 358 31 (divided by 2). CC55 742.

**HIS2** A2309 Approximants de Padé

**HIS1** N2327 Fraction rationnelle

$$\frac{1 + 76z + 230z^2 + 76z^3 + z^4}{(z - 1)^6}$$

1, 82, 707, 3108, 9669, 24310, 52871, 103496, 187017, 317338, 511819,  
791660, 1182285, 1713726, 2421007, 3344528, 4530449, 6031074, 7905235,  
10218676

**NSW numbers**

**Réf.** AMM 4 25 1897. IDM 10 236 03. ANN 36 644 35. RI89 288.

**HIS2** A2315      Approximants de Padé

**HIS1** N1869      Fraction rationnelle

$$\frac{1 + z}{z^2 - 6z + 1}$$

1, 7, 41, 239, 1393, 8119, 47321, 275807, 1607521, 9369319, 54608393,  
318281039, 1855077841, 10812186007, 63018038201, 367296043199,  
2140758220993

**The pronic numbers**

**Réf.** D1 2 232.

**HIS2** A2378      Approximants de Padé

**HIS1** N0616      Fraction rationnelle

$$\frac{2z}{(1-z)^3}$$

0, 2, 6, 12, 20, 30, 42, 56, 72, 90, 110, 132, 156, 182, 210, 240, 272, 306, 342,  
380, 420, 462, 506, 552, 600, 650, 702, 756, 812, 870, 930, 992, 1056, 1122,  
1190, 1260

**Réf.** MFM 74 62 70 (divided by 5).

**HIS2** A2409      Approximants de Padé

**HIS1** N1668      Fraction rationnelle

$$\frac{1}{(1 - 2z)^7}$$

1, 14, 112, 672, 3360, 14784, 59136, 219648, 768768, 2562560, 8200192,  
25346048, 76038144, 222265344, 635043840, 1778122752, 4889837568,  
13231325184, 35283533824

### Pentagonal pyramidal numbers

**Réf.** D1 2 2. B1 194.

**HIS2** A2411      Approximants de Padé

**HIS1** N1709      Fraction rationnelle

$$\frac{1 + 2z}{(z - 1)^4}$$

1, 6, 18, 40, 75, 126, 196, 288, 405, 550, 726, 936, 1183, 1470, 1800, 2176,  
2601, 3078, 3610, 4200, 4851, 5566, 6348, 7200, 8125, 9126, 10206, 11368,  
12615, 13950

### Hexagonal pyramidal numbers

Réf. D1 2 2. B1 194.

**HIS2** A2412      Approximants de Padé

**HIS1** N1839      Fraction rationnelle

$$\frac{1 + 3z}{(z - 1)^4}$$

1, 7, 22, 50, 95, 161, 252, 372, 525, 715, 946, 1222, 1547, 1925, 2360, 2856, 3417, 4047, 4750, 5530, 6391, 7337, 8372, 9500, 10725, 12051, 13482, 15022, 16675, 18445

### Heptagonal pyramidal numbers

Réf. D1 2 2. B1 194.

**HIS2** A2413      Approximants de Padé

**HIS1** N1904      Fraction rationnelle

$$\frac{1 + 4z}{(z - 1)^4}$$

1, 8, 26, 60, 115, 196, 308, 456, 645, 880, 1166, 1508, 1911, 2380, 2920, 3536, 4233, 5016, 5890, 6860, 7931, 9108, 10396, 11800, 13325, 14976, 16758, 18676, 20735

### Octagonal pyramidal numbers

Réf. D1 2 2. B1 194.

**HIS2** A2414      Approximants de Padé

**HIS1** N1966      Fraction rationnelle

$$\frac{1 + 5z}{(z - 1)^4}$$

1, 9, 30, 70, 135, 231, 364, 540, 765, 1045, 1386, 1794, 2275, 2835, 3480, 4216, 5049, 5985, 7030, 8190, 9471, 10879, 12420, 14100, 15925, 17901, 20034, 22330, 24795

### 4-dimensional pyramidal numbers

Réf. B1 195.

**HIS2** A2415      Approximants de Padé

**HIS1** N1714      Fraction rationnelle

$$\frac{1 + z}{(1 - z)^5}$$

1, 6, 20, 50, 105, 196, 336, 540, 825, 1210, 1716, 2366, 3185, 4200, 5440, 6936, 8721, 10830, 13300, 16170, 19481, 23276, 27600, 32500, 38025, 44226, 51156, 58870

**4-dimensional figurate numbers**

Réf. B1 195.

**HIS2** A2417

Approximants de Padé

**HIS1** N1907

Fraction rationnelle

$$\frac{1 + 3z}{(1 - z)^5}$$

1, 8, 30, 80, 175, 336, 588, 960, 1485, 2200, 3146, 4368, 5915, 7840, 10200, 13056, 16473, 20520, 25270, 30800, 37191, 44528, 52900, 62400, 73125, 85176, 98658

**4-dimensional figurate numbers**

Réf. B1 195.

**HIS2** A2418

Approximants de Padé

**HIS1** N1970

Fraction rationnelle

$$\frac{1 + 4z}{(1 - z)^5}$$

1, 9, 35, 95, 210, 406, 714, 1170, 1815, 2695, 3861, 5369, 7280, 9660, 12580, 16116, 20349, 25365, 31255, 38115, 46046, 55154, 65550, 77350, 90675, 105651

### 4-dimensional figurate numbers

Réf. B1 195.

**HIS2** A2419      Approximants de Padé

**HIS1** N2008      Fraction rationnelle

$$\frac{1 + 5z}{(1 - z)^5}$$

1, 10, 40, 110, 245, 476, 840, 1380, 2145, 3190, 4576, 6370, 8645, 11480, 14960, 19176, 24225, 30210, 37240, 45430, 54901, 65780, 78200, 92300, 108225, 126126

Réf. TH09 164. FMR 1 55.

**HIS2** A2420      Recouvrements      Suite P-récurrente

**HIS1** N0128      algébrique

$a(n) (n - 1) (n - 2) = 2 a(n - 1) (n - 2) (2n - 5)$

$$\frac{1}{(1 - 4z)^{1/2}}$$

1, 2, 2, 4, 10, 28, 84, 264, 858, 2860, 9724, 33592, 117572, 416024, 1485800, 5348880, 19389690, 70715340, 259289580, 955277400, 3534526380, 13128240840, 48932534040



**Réf.** TH09 164. FMR 1 55.

**HIS2** A2421                      Recouplements                      Inverse de A2457  
**HIS1** N1683                      algébrique

$$(1 - 4z)^{3/2}$$

1, 6, 6, 4, 6, 12, 28, 72, 198, 572, 1716, 5304, 16796, 54264, 178296, 594320,  
 2005830, 6843420, 23571780, 81880920, 286583220, 1009864680,  
 3580429320, 12765008880

**Réf.** TH09 164. FMR 1 55.

**HIS2** A2422                      Recouplements                      Inverse de A2802  
**HIS1** N2003                      algébrique

$$(1 - 4z)^{5/2}$$

1, 10, 30, 20, 10, 12, 20, 40, 90, 220, 572, 1560, 4420, 12920, 38760, 118864,  
 371450, 1179900, 3801900, 12406200, 40940460, 136468200, 459029400,  
 1556708400, 5318753700

Réf. TH09 164. FMR 1 55.

**HIS2** A2423 Recoupements

**HIS1** N2114 algébrique

$$(1 - 4z)^{7/2}$$

1, 14, 70, 140, 70, 28, 28, 40, 70, 140, 308, 728, 1820, 4760, 12920, 36176,  
104006, 305900, 917700, 2801400, 8684340, 27293640, 86843400,  
279409200, 908079900, 2978502072

Réf. TH09 164. FMR 1 55.

**HIS2** A2424 Recoupements

**HIS1** N2188 algébrique

$$(1 - 4z)^{9/2}$$

1, 18, 126, 420, 630, 252, 84, 72, 90, 140, 252, 504, 1092, 2520, 6120, 15504,  
40698, 110124, 305900, 869400, 2521260, 7443720, 22331160, 67964400,  
209556900, 653817528

### From expansion of $(1+x+x^2)^n$

Réf. EUL (1) 15 59 27. FQ 7 341 69. HE74 1 42.

HIS2 A2426          Hypergéométrique

HIS1 N1070          algébrique

$$\frac{1}{(1+z)^{1/2} (3z-1)^{1/2}}$$

1, 1, 3, 7, 19, 51, 141, 393, 1107, 3139, 8953, 25653, 73789, 212941, 616227, 1787607, 5196627, 15134931, 44152809, 128996853, 377379369

Réf. QJM 47 110 16. FMR 1 112. DA63 2 283.

HIS2 A2446          Approximants de Padé

HIS1 N1748          Fraction rationnelle

$$\frac{6z}{(1-4z)(1-z)}$$

0, 6, 30, 126, 510, 2046, 8190, 32766, 131070, 524286, 2097150, 8388606, 33554430, 134217726, 536870910, 2147483646, 8589934590, 34359738366

Réf. TH09 35. FMR 1 112. RCI 217.

**HIS2** A2450      Approximants de Padé

**HIS1** N1608      Fraction rationnelle

$$1$$


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$$(1 - 4z)(1 - z)$$

1, 5, 21, 85, 341, 1365, 5461, 21845, 87381, 349525, 1398101, 5592405,  
22369621, 89478485, 357913941, 1431655765, 5726623061, 22906492245

Réf. TH09 35. FMR 1 112. RCI 217.

**HIS2** A2451      Approximants de Padé

**HIS1** N2118      Fraction rationnelle

$$1$$


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$$(1 - z)(1 - 4z)(1 - 9z)$$

1, 14, 147, 1408, 13013, 118482, 1071799, 9668036, 87099705, 784246870,  
7059619931, 63542171784, 571901915677, 5147206719578,  
46325218390143, 416928397167052

**Central factorial numbers**

Réf. TH09 36. FMR 1 112. RCI 217.

**HIS2** A2452      Approximants de Padé

**HIS1** N2025      Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 9z)$$

1, 10, 91, 820, 7381, 66430, 597871, 5380840, 48427561, 435848050,  
3922632451, 35303692060, 317733228541, 2859599056870,  
25736391511831

**Central factorial numbers**

Réf. TH09 36. FMR 1 112. RCI 217.

**HIS2** A2453      Approximants de Padé

**HIS1** N2283      Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 9z) (1 - 25z)$$

1, 35, 966, 24970, 631631, 15857205, 397027996

### Central factorial numbers

Réf. OP80 7. FMR 1 110. RCI 217.

**HIS2** A2454          Hypergéométrique          Suite P-récurrente

**HIS1** N1510          Fraction rationnelle          f.g. exponentielle double

$$a(n) = 4 (n - 1)^2 a(n - 1)$$

$${}_3F_2 \left( [1, 1, 1], [2, 2], 4z \right)$$

1, 4, 64, 2304, 147456, 14745600, 2123366400, 416179814400,  
106542032486400, 34519618525593600

### Central differences of 0

Réf. QJM 47 110 16. FMR 1 112. DA63 2 283.

**HIS2** A2456          Hypergéométrique          Suite P-récurrente

**HIS1** N2270          algébrique          f.g. exponentielle double

$$\frac{z (2 + z)}{2 (1 - 2z)^{7/2}}$$

1, 30, 1260, 75600, 6237000, 681080400, 95351256000, 16672848192000,  
3563821301040000, 914714133933600000, 277707211062240960000

Réf. OP80 21. SE33 92. JO39 449. SAM 22 120 43. LA56 514.

**HIS2** A2457            Hypergéométrique            Suite P-récurrente

**HIS1** N1752            algébrique

$$\frac{1}{(1 - 4z)^{3/2}}$$

1, 6, 30, 140, 630, 2772, 12012, 51480, 218790, 923780, 3879876, 16224936, 67603900, 280816200, 1163381400, 4808643120, 19835652870, 81676217700, 335780006100

### The game of Mousetrap with n cards

Réf. QJM 15 241 1878. jos.

**HIS2** A2467            Recouplements            A0166 - 1

**HIS1** N1423            exponentielle

$$\frac{1 - \exp(z)}{(z - 1) \exp(z)}$$

1, 1, 4, 15, 76, 455, 3186, 25487, 229384, 2293839, 25232230, 302786759, 3936227868, 55107190151, 826607852266, 13225725636255, 224837335816336, 4047072044694047

### Wonderful Demlo numbers

Réf. MAS 6 68 38.

**HIS2** A2477      Approximants de Padé      Demlo est une ville aux E.U.

**HIS1** N2339      Fraction rationnelle

$a(n) = 1, 11*11, 111*111, 1111*1111, \dots$

$$1 + 10z$$

-----

$$(1 - z) (1 - 10z) (1 - 100z)$$

1, 121, 12321, 1234321, 123454321, 12345654321, 1234567654321,  
123456787654321, 12345678987654321, 1234567900987654321

### Bisection of A0930

Réf. EUL (1) 1 322 11.

**HIS2** A2478      Approximants de Padé

**HIS1** N1017      Fraction rationnelle

$$1$$

$$\frac{1}{1 - z - 2z^2 - z^3}$$

1, 1, 3, 6, 13, 28, 60, 129, 277, 595, 1278, 2745, 5896, 12664, 27201, 58425,  
125491, 269542, 578949, 1243524, 2670964, 5736961, 12322413, 26467299,  
56849086



**Réf.** ELM 2 95 47. WW 114.

**HIS2** A2487 Euler

**HIS1** N0056 Produit infini

$a(2n+1) = a(n)$  et  $a(2n) = a(n) + a(n-1)$

$$\prod_{n \geq 0} (1 + z^{2^n} + z^{2^{(n+1)}})$$

1, 1, 2, 1, 3, 2, 3, 1, 4, 3, 5, 2, 5, 3, 4, 1, 5, 4, 7, 3, 8, 5, 7, 2, 7, 5, 8, 3, 7, 4, 5,  
1, 6, 5, 9, 4, 11, 7, 10, 3, 11, 8, 13, 5, 12, 7, 9, 2, 9, 7, 12, 5, 13, 8, 11, 3, 10, 7,  
11, 4, 9, 5, 6, 1, 7

**Réf.** MOC 4 23 50.

**HIS2** A2492 Approximants de Padé

**HIS1** N1444 Fraction rationnelle

$$\frac{4(1+z)}{(z-1)^4}$$

4, 20, 56, 120, 220, 364, 560, 816, 1140, 1540, 2024, 2600, 3276, 4060, 4960,  
5984, 7140, 8436, 9880, 11480, 13244, 15180, 17296, 19600, 22100, 24804,  
27720

### Expansion of a modular function

Réf. PLMS 9 386 59.

**HIS2** A2512 Euler

**HIS1** N0539 Produit infini

Conjecture : erreurs dans la suite à partir du 12<sup>e</sup> terme ?

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 2, 2, 4, 2, 2, 2, 4, \dots$$

1, 2, 5, 10, 22, 40, 75, 130, 230, 382, 636, 1016, 1633, 2540, 3942, 5978, 9057

### Expansion of a modular function

Réf. PLMS 9 387 59.

**HIS2** A2513 Euler erreur probable à partir du 13<sup>e</sup>

**HIS1** N0931 Produit infini terme

\* Le motif [1,2] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^{c(n)})}$$

$$c(n) = 1, 2, \dots *$$

1, 1, 3, 4, 9, 12, 23, 31, 54, 73, 118, 159, 246, 340, 500, 684, 984, 1341, 1883

### Permutations of length n within distance 2

Réf. AENS 79 207 62.

HIS2 A2524 Approximants de Padé

HIS1 N0626 Fraction rationnelle

$$\frac{1 - z}{1 - 2z - 2z^3 + z^5}$$

1, 1, 2, 6, 14, 31, 73, 172, 400, 932, 2177, 5081, 11854, 27662, 64554

### Permutations according to distance

Réf. AENS 79 207 62.

HIS2 A2525 Approximants de Padé

HIS1 N0463 Fraction rationnelle

$$\frac{z}{1 - 2z - 2z^3 + z^5}$$

0, 1, 2, 4, 10, 24, 55, 128, 300, 700, 1632, 3809, 8890, 20744, 48406

Réf. MQET 1 10 16. NZ66 181.

**HIS2** A2530      Approximants de Padé

**HIS1** N0934      Fraction rationnelle

$$\frac{1 - z - z^2}{1 - 4z + z^4}$$

1, 1, 3, 4, 11, 15, 41, 56, 153, 209, 571, 780, 2131, 2911, 7953, 10864, 29681, 40545, 110771, 151316, 413403, 564719, 1542841, 2107560, 5757961, 7865521

Réf. MQET 1 10 16. NZ66 181.

**HIS2** A2531      Approximants de Padé

**HIS1** N0513      Fraction rationnelle

$$\frac{1 + z - 2z^2 + z^3}{1 - 4z + z^4}$$

1, 1, 2, 5, 7, 19, 26, 71, 97, 265, 362, 989, 1351, 3691, 5042, 13775, 18817, 51409, 70226, 191861, 262087, 716035, 978122, 2672279, 3650401, 9973081, 13623482

Réf. MQET 1 11 16.

**HIS2** A2532      Approximants de Padé

**HIS1** N0758      Fraction rationnelle

$$\frac{z}{1 - 2z - 5z^2}$$

0, 1, 2, 9, 28, 101, 342, 1189, 4088, 14121, 48682, 167969, 579348, 1998541, 6893822, 23780349, 82029808, 282961361, 976071762, 3366950329, 11614259468

Réf. MQET 1 11 16.

**HIS2** A2533      Approximants de Padé

**HIS1** N1834      Fraction rationnelle

$$\frac{1 - z}{1 - 2z - 5z^2}$$

1, 1, 7, 19, 73, 241, 847, 2899, 10033, 34561, 119287, 411379, 1419193, 4895281, 16886527, 58249459, 200931553, 693110401, 2390878567, 8247309139

Réf. MQET 1 11 16.

**HIS2** A2534      Approximants de Padé

**HIS1** N0814      Fraction rationnelle

$$\frac{z}{1 - 2z - 9z^2}$$

0, 1, 2, 13, 44, 205, 806, 3457, 14168, 59449, 246410, 1027861, 4273412,  
17797573, 74055854, 308289865, 1283082416, 5340773617, 22229288978,  
92525540509

Réf. MQET 1 11 16.

**HIS2** A2535      Approximants de Padé

**HIS1** N2043      Fraction rationnelle

$$\frac{1 - z}{1 - 2z - 9z^2}$$

1, 1, 11, 31, 161, 601, 2651, 10711, 45281, 186961, 781451, 3245551,  
13524161, 56258281, 234234011, 974792551, 4057691201, 16888515361,  
70296251531

Réf. MQET 1 12 16.

HIS2 A2536 Approximants de Padé

HIS1 N1540 Fraction rationnelle

$$\frac{z (1 + z - 3z^2)}{1 - 8z^2 + 9z^4}$$

0, 1, 1, 5, 8, 31, 55, 203, 368, 1345, 2449, 8933, 16280, 59359, 108199

Réf. MQET 1 12 16.

HIS2 A2537 Approximants de Padé

HIS1 N1379 Fraction rationnelle

$$\frac{1 + z - 4z^2 + 3z^3}{1 - 8z^2 + 9z^4}$$

1, 1, 4, 11, 23, 79, 148, 533, 977, 3553, 6484, 23627, 43079, 157039, 286276, 1043669, 1902497, 6936001, 12643492, 46094987, 84025463, 306335887, 558412276, 2035832213

### Coefficients for numerical differentiation

Réf. OP80 21. SE33 92. SAM 22 120 43. LA56 514.

**HIS2** A2544          Hypergéométrique          Suite P-récurrente

**HIS1** N2075          algébrique

${}_2F_1 ([2, 3/2], [1], 4z)$

$$\frac{1 + 2z}{(1 - 4z)^{5/2}}$$

1, 12, 90, 560, 3150, 16632, 84084, 411840, 1969110, 9237800, 42678636,  
194699232, 878850700, 3931426800, 17450721000

### From a definite integral

Réf. EMS 10 184 57.

**HIS2** A2570          Approximants de Padé

**HIS1** N1698          Fraction rationnelle

$$\frac{1}{(1 - z) (1 - 3z + z^2) (1 + z)^3}$$

1, 1, 6, 11, 36, 85, 235, 600, 1590, 4140, 10866, 28416, 74431, 194821,  
510096, 1335395, 3496170, 9153025, 23963005, 62735880



### From a definite integral

Réf. EMS 10 184 57.

**HIS2** A2571      Approximants de Padé

**HIS1** N1553      Fraction rationnelle

$$\frac{1 + 4z + z^2 - z^3}{(1 - 3z + z^2)(1 + z)^2}$$

1, 5, 10, 30, 74, 199, 515, 1355, 3540, 9276, 24276, 63565, 166405, 435665,  
1140574, 2986074, 7817630, 20466835, 53582855, 140281751

Réf. CC55 742. JO61 7.

**HIS2** A2593      Approximants de Padé

**HIS1** N2262      Fraction rationnelle

$$\frac{z(1+z)(z^2 + 22z + 1)}{(z-1)^5}$$

0, 1, 28, 153, 496, 1225, 2556, 4753, 8128, 13041, 19900, 29161, 41328,  
56953, 76636, 101025, 130816, 166753, 209628, 260281, 319600, 388521,  
468028, 559153

### Sums of 5th powers of odd numbers

Réf. CC55 742.

HIS2 A2594 Approximants de Padé

HIS1 N2354 Fraction rationnelle

$$\frac{(1+z)(z^4 + 236z^3 + 1446z^2 + 236z + 1)}{(1-z)^7}$$

1, 244, 3369, 20176, 79225, 240276, 611569, 1370944, 2790801, 5266900, 9351001, 15787344, 25552969, 39901876, 60413025, 89042176, 128177569, 180699444

### A generalized partition function

Réf. PNISI 17 237 51.

HIS2 A2597 LLL

HIS1 N1000 Fraction rationnelle

$$\frac{1}{(z+1)^2 (z^2+z+1)^3 (z-1)^6 z^6}$$

1, 3, 6, 9, 15, 25, 34, 51, 73, 97, 132, 178, 226, 294, 376, 466, 582, 722, 872, 1062, 1282, 1522, 1812, 2147, 2507, 2937, 3422, 3947, 4557, 5243, 5978, 6825, 7763, 8771

Réf. AMS 26 304 55.

HIS2 A2620 Approximants de Padé

HIS1 N0374 Fraction rationnelle

$$\frac{1}{(1+z)(z-1)^3}$$

1, 2, 4, 6, 9, 12, 16, 20, 25, 30, 36, 42, 49, 56, 64, 72, 81, 90, 100, 110, 121, 132, 144, 156, 169, 182, 196, 210, 225, 240, 256, 272, 289, 306, 324, 342, 361, 380, 400, 420

Réf. AMS 26 304 55.

HIS2 A2621 Approximants de Padé

HIS1 N0394 Fraction rationnelle

$$\frac{1}{(1+z)^2 (z^2+z+1) (1+z)^2 (z-1)^5}$$

1, 2, 4, 7, 12, 18, 27, 38, 53, 71, 94, 121, 155, 194, 241, 295, 359, 431, 515, 609, 717, 837, 973, 1123, 1292, 1477, 1683, 1908, 2157, 2427, 2724, 3045, 3396, 3774, 4185

**A partition function****Réf.** AMS 26 304 55.**HIS2** A2622      Approximants de Padé**HIS1** N0395      Fraction rationnelle

$$\frac{1}{(1-z)^2 (1-z)^2 (1-z)^3 (1-z)^4 (1-z)^5}$$

1, 2, 4, 7, 12, 19, 29, 42, 60, 83, 113, 150, 197, 254, 324, 408, 509, 628, 769,  
 933, 1125, 1346, 1601, 1892, 2225, 2602, 3029, 3509, 4049, 4652, 5326,  
 6074, 6905, 7823

**Réf.** AMS 26 308 55. PGEC 22 1050 73.**HIS2** A2623      Approximants de Padé**HIS1** N1050      Fraction rationnelle

$$\frac{1}{(1+z)(z-1)^4}$$

1, 3, 7, 13, 22, 34, 50, 70, 95, 125, 161, 203, 252, 308, 372, 444, 525, 615,  
 715, 825, 946, 1078, 1222, 1378, 1547, 1729, 1925, 2135, 2360, 2600, 2856,  
 3128, 3417, 3723

**A partition function****Réf.** AMS 26 308 55.**HIS2** A2624      Approximants de Padé**HIS1** N1091      Fraction rationnelle

$$\frac{1}{(1+z)^2 (1-z)^5}$$

1, 3, 8, 16, 30, 50, 80, 120, 175, 245, 336, 448, 588, 756, 960, 1200, 1485,  
 1815, 2200, 2640, 3146, 3718, 4368, 5096, 5915, 6825, 7840, 8960, 10200,  
 11560, 13056

**Réf.** AMS 26 308 55.**HIS2** A2625      Approximants de Padé**HIS1** N1093      Fraction rationnelle

$$\frac{1}{(z^2 + z + 1)^2 (1+z)^2 (z-1)^6}$$

1, 3, 8, 17, 33, 58, 97, 153, 233, 342, 489, 681, 930, 1245, 1641, 2130, 2730,  
 3456, 4330, 5370, 6602, 8048, 9738, 11698, 13963, 16563, 19538, 22923,  
 26763, 31098, 35979

Réf. AMS 26 308 55.

HIS2 A2626 Approximants de Padé

HIS1 N1094 Fraction rationnelle

$$\frac{1}{(z^2 + 1)^2 (z^2 + z + 1)^2 (z + 1)^3 (1 - z)^7}$$

1, 3, 8, 17, 34, 61, 105, 170, 267, 403, 594, 851, 1197, 1648, 2235, 2981, 3927, 5104, 6565, 8351, 10529, 13152, 16303, 20049, 24492, 29715, 35841, 42972, 51255

Réf. MFM 73 18 69.

HIS2 A2662 Approximants de Padé

HIS1 N1585 Fraction rationnelle

$$\frac{z^2}{(2z - 1)^3 (z - 1)^3}$$

0, 0, 1, 5, 16, 42, 99, 219, 466, 968, 1981, 4017, 8100, 16278, 32647, 65399, 130918, 261972, 524097, 1048365, 2096920, 4194050, 8388331, 16776915, 33554106, 67108512

**Réf.** MFM 73 18 69.

**HIS2** A2663      Approximants de Padé

**HIS1** N1725      Fraction rationnelle

$$\frac{1}{(2z - 1)(1 - z)^4}$$

1, 6, 22, 64, 163, 382, 848, 1816, 3797, 7814, 15914, 32192, 64839, 130238,  
261156, 523128, 1047225, 2095590, 4192510, 8386560, 16774891,  
33551806, 67105912, 134214424

**Réf.** MFM 73 18 69.

**HIS2** A2664      Approximants de Padé

**HIS1** N1851      Fraction rationnelle

$$\frac{1}{(2z - 1)(1 - z)^5}$$

1, 7, 29, 93, 256, 638, 1486, 3302, 7099, 14913, 30827, 63019, 127858,  
258096, 519252, 1042380, 2089605, 4185195, 8377705, 16764265,  
33539156, 67090962, 134196874, 268411298

**Coefficients for central differences**

Réf. SAM 42 162 63.

HIS2 A2671      Hypergéométrique

HIS1 N2246      algébrique

$$\frac{1}{(1 - 16z)^{3/2}}$$

1, 24, 1920, 322560, 92897280, 40874803200, 25505877196800,  
21424936845312000, 23310331287699456000, 31888533201572855808000

**Coefficients for central differences**

Réf. SAM 42 162 63.

HIS2 A2674      Hypergéométrique      f.g. exponentielle double

HIS1 N2092      algébrique

$$\frac{1}{2(1 - 4z)^{1/2}}$$

1, 12, 360, 20160, 1814400, 239500800, 43589145600, 10461394944000,  
3201186852864000, 1216451004088320000, 562000363888803840000



### Coefficients of orthogonal polynomials

Réf. MOC 9 174 55.

**HIS2** A2690 Dérivée logarithmique Suite P-récurrente

**HIS1** N1491 exponentielle:algébrique

$$a(n) = (4n-4)a(n-1) + (8n-20)a(n-2)$$

$$\frac{1 - 2z}{(1 - 4z)^{3/2}}$$

1, 4, 36, 480, 8400, 181440, 4656960, 138378240, 4670265600,  
176432256000, 7374868300800, 337903056691200

### Coefficients of orthogonal polynomials

Réf. MOC 9 174 55.

**HIS2** A2691 Dérivée logarithmique Suite P-récurrente

**HIS1** N1996 exponentielle

$$n a(n) = 2(n+1)(2n-1)a(n-1)$$

$$\frac{1 - z}{(1 - 4z)^{5/2}}$$

1, 9, 120, 2100, 45360, 1164240, 34594560, 1167566400, 44108064000,  
1843717075200, 84475764172800

### Binomial coefficients $C(2n, n-2)$

Réf. LA56 517. AS1 828.

HIS2 A2694            Hypergéométrique

HIS1 N1741            algébrique

16

$$\frac{16}{(1-4z)^{1/2} (1+(1-4z)^{1/2})^4}$$

1, 6, 28, 120, 495, 2002, 8008, 31824, 125970, 497420, 1961256, 7726160, 30421755, 119759850, 471435600, 1855967520, 7307872110, 28781143380

### Spheroidal harmonics

Réf. MES 52 75 24.

HIS2 A2695            LLL            Suite P-récurrente

HIS1 N1985            algébrique

$(n-2)a(n) = (6n-9)a(n-1) + (-n+1)a(n-2)$

z

$$\frac{z}{(z^2-6z+1)^{3/2}}$$

0, 1, 9, 66, 450, 2955, 18963, 119812, 748548, 4637205, 28537245

Réf. LA56 517. AS1 828.

**HIS2** A2696          Hypergéométrique

**HIS1** N1921          algébrique

${}_2F_1([7/2, 4], [7], 4z)$

64

$$\frac{1}{(1 - 4z)^{1/2} (1 + (1 - 4z)^{1/2})^6}$$

1, 8, 45, 220, 1001, 4368, 18564, 77520, 319770, 1307504, 5311735,  
21474180, 86493225, 347373600, 1391975640, 5567902560, 22239974430,  
88732378800

### Coefficients of Chebyshev polynomials

Réf. LA56 516.

**HIS2** A2697          Approximants de Padé

**HIS1** N1923          Fraction rationnelle

$$\frac{1}{(4z - 1)^2}$$

1, 8, 48, 256, 1280, 6144, 28672, 131072, 589824, 2621440, 11534336,  
50331648

**Coefficients of Chebyshev polynomials****Réf.** LA56 516.**HIS2** A2698

Approximants de Padé

**HIS1** N2189

Fraction rationnelle

$$\frac{1 + 6z - 8z^2}{(1 - 4z)^3}$$

1, 18, 160, 1120, 6912, 39424, 212992, 1105920, 5570560, 27394048,  
132120576

**Réf.** LA56 518.**HIS2** A2699

Approximants de Padé

**HIS1** N0825

Fraction rationnelle

$$\frac{2z}{(4z - 1)^2}$$

0, 2, 16, 96, 512, 2560, 12288, 57344, 262144, 1179648, 5242880, 23068672,  
100663296, 436207616, 1879048192, 8053063680, 34359738368,  
146028888064, 618475290624, 2611340115968

## Coefficients of Chebyshev polynomials

Réf. LA56 518.

HIS2 A2700 Approximants de Padé

HIS1 N1275 Fraction rationnelle

$$\frac{4z - 3}{(4z - 1)^3}$$

3, 40, 336, 2304, 14080, 79872, 430080, 2228224, 11206656, 55050240,  
265289728, 1258291200

## Keys

Réf. MAG 53 11 69.

HIS2 A2714 Approximants de Padé

HIS1 N1832 Fraction rationnelle

$$\frac{7 - 9z - 9z^2 + 3z^3}{1 - 4z + 2z^2 + 4z^3 - z^4}$$

7, 19, 53, 149, 421, 1193, 3387, 9627, 27383, 77923

**Réf.** MAG 46 55 62; 55 440 71. MMAG 47 290 74.

**HIS2** A2717      Approximants de Padé

**HIS1** N1569      Fraction rationnelle

$$\frac{1 + 2z}{(1+z)(z-1)^4}$$

1, 5, 13, 27, 48, 78, 118, 170, 235, 315, 411, 525, 658, 812, 988, 1188, 1413, 1665, 1945, 2255, 2596, 2970, 3378, 3822, 4303, 4823, 5383, 5985, 6630, 7320, 8056, 8840

**Réf.** SE33 78.

**HIS2** A2720      Dérivée logarithmique      Suite P-récurrente

**HIS1** N0708      exponentielle (rationnel)

$a(n) = (2n - 2) a(n-1) + (-n^2 + 4n - 4) a(n-2)$

$$\frac{1}{(1-z) \exp(z/(z-1))}$$

1, 2, 7, 34, 209, 1546, 13327, 130922, 1441729, 17572114, 234662231, 3405357682, 53334454417, 896324308634, 16083557845279, 306827170866106, 6199668952527617

**Apéry numbers**

Réf. SE33 93. MI 1 195 78.

HIS2 A2736          Hypergéométrique

HIS1 N0848          algébrique

$$\frac{1 + 2z}{(1 - 4z)^{5/2}}$$

0, 2, 24, 180, 1120, 6300, 33264, 168168, 823680, 3938220, 18475600,  
 85357272, 389398464, 1757701400, 7862853600, 34901442000,  
 153876579840, 674412197580, 2940343837200

**Coefficients for extrapolation**

Réf. SE33 97.

HIS2 A2740          Hypergéométrique          Suite P-récurrente

HIS1 N0821          algébrique

$$\frac{6z^2 - 6z + 1 + (1 - 4z)^{3/2}}{-2(1 - 4z)^{3/2}z^3}$$

0, 2, 15, 84, 420, 1980, 9009, 40040

**Logarithmic numbers**

Réf. MAS 31 77 63. jos.

**HIS2** A2741 Recouplements Suite P-récurrente**HIS1** N0010 exponentielle

$$a(n) = (n - 3) a(n - 1) + (n - 2) a(n - 3) + (2n - 4) a(n - 2)$$

$$\ln(1 - z)$$


---

$$\exp(z)$$

1, 1, 2, 0, 9, 35, 230, 1624, 13209, 120287, 1214674, 13469896, 162744945,  
 2128047987, 29943053062, 451123462672, 7245940789073,  
 123604151490591

**Logarithmic numbers**

Réf. MAS 31 78 63. jos.

**HIS2** A2747 Dérivée logarithmique Suite P-récurrente**HIS1** N0759 exponentielle

$$a(n) = 2 a(n - 1) + (n^2 - n - 1) a(n - 2) + (-2n^2 + 6n - 4) a(n - 3) \\ + (n^2 - 5n + 6) a(n - 4)$$

$$\exp(z) \frac{z^3 - z^2 - z - 1}{(1 - z)^2 (z + 1)^2}$$

1, 2, 9, 28, 185, 846, 7777, 47384, 559953, 4264570, 61594841, 562923252,  
 9608795209, 102452031878, 2017846993905, 24588487650736,  
 548854382342177



**Terms in certain determinants****Réf.** PLMS 10 122 1879.**HIS2** A2775 Dérivée logarithmique**HIS1** N1927 Fraction rationnelle

$$\frac{z^2 + 4z + 1}{(z - 1)^4}$$

0, 1, 8, 54, 384, 3000, 25920, 246960, 2580480

**Réf.** IJ1 11 162 69.**HIS2** A2783 Approximants de Padé**HIS1** N1159 Fraction rationnelle

$$\frac{1 - 3z + 4z^2}{(1 - z)(1 - 2z)(1 - 3z)}$$

1, 3, 11, 39, 131, 423, 1331, 4119, 12611, 38343, 116051, 350199, 1054691, 3172263, 9533171, 28632279, 85962371, 258018183, 774316691, 2323474359, 6971471651, 20916512103

Réf. JRAM 227 49 67.

**HIS2** A2798 Approximants de Padé

**HIS1** N2186 Fraction rationnelle

$$\frac{3 (6 + 9 z + 2 z^2)}{(1 + z) (z - 1)^2}$$

18, 45, 69, 96, 120, 147, 171

Réf. AJM 2 94 1879. LU91 1 223.

**HIS2** A2801 équations différentielles Suite P-récurrente

**HIS1** N0744 exponentielle (algébrique) Formule de B. Salvy

$a(n) = (2n - 3) a(n - 1) + (-n + 2) a(n - 2)$

$$\frac{\exp(1/2 z)^{3/4}}{(-1 + 2z)^{1/4}}$$

1, 1, 2, 8, 50, 418, 4348, 54016, 779804, 12824540, 236648024, 4841363104,  
108748223128, 2660609220952, 70422722065040, 2005010410792832

Réf. JO39 449. JCT 13 215 72.

**HIS2** A2802            Hypergéométrique

**HIS1** N2019            algébrique

${}_2F_1([5/2], [ ], 4z)$

$$\frac{1}{(1 - 4z)^{5/2}}$$

1, 10, 70, 420, 2310, 12012, 60060, 291720, 1385670, 6466460, 29745716,  
135207800, 608435100, 2714556600, 12021607800, 52895074320,  
231415950150, 1007340018300

Réf. JO39 449. JCT B18 258 75.

**HIS2** A2803            Hypergéométrique            Suite P-récurrente

**HIS1** N2140            algébrique

${}_2F_1([5/2], [ ], 4z)$

$$\frac{1 + z}{(1 - 4z)^{7/2}}$$

1, 15, 140, 1050, 6930, 42042, 240240, 1312740, 6928350, 35565530,  
178474296, 878850700, 4259045700, 20359174500, 96172862400,  
449608131720, 2082743551350

Réf. PIEE 115 763 68. DM 55 272 85.

HIS2 A2807 P-réurrences Suite P-récurrente

HIS1 N1867

$$\begin{aligned}
 a(n) = & n a(n - 5) + (6n + 1) a(n - 3) \\
 & - (4n + 7) a(n - 2) \\
 & + (n + 5) a(n - 1) - 2 a(n - 5) \\
 & + (-4n + 4) a(n - 4)
 \end{aligned}$$

0, 0, 1, 7, 37, 197, 1172, 8018, 62814, 556014, 5488059, 59740609,  
 710771275, 9174170011, 127661752406, 1904975488436, 30341995265036,  
 513771331467372, 9215499383109573

### Doubly triangular numbers

Réf. TCPS 9 477 1856. SIAC 4 477 75. ANS 4 1178 76.

HIS2 A2817 Approximants de Padé

HIS1 N1718 Fraction rationnelle

$$\frac{1 + z + z^2}{(1 - z)^5}$$

1, 6, 21, 55, 120, 231, 406, 666, 1035, 1540, 2211, 3081, 4186, 5565, 7260,  
 9316, 11781, 14706, 18145, 22155, 26796, 32131, 38226, 45150, 52975,  
 61776, 71631, 82621

### Partitions of $n$ into parts $1/2, 3/4, 7/8, \text{etc}$

Réf. EMS 11 224 59.

HIS2 A2843 Approximants de Padé Conjecture

HIS1 N0405 Fraction rationnelle

$$\frac{(z^2 + z + 1)(z - 1)^2}{1 - 2z - z^3 + 3z^4}$$

1, 1, 2, 4, 7, 13, 24, 43, 78, 141, 253, 456

### Partitions of $n$ with no part of size 1

Réf. TAIT 1 334. AS1 836.

HIS2 A2865 Euler

HIS1 N0113 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 0, 1, 1, 1, 1, 1, \dots$$

1, 0, 1, 1, 2, 2, 4, 4, 7, 8, 12, 14, 21, 24, 34, 41, 55, 66, 88, 105, 137, 165, 210, 253, 320, 383, 478, 574, 708, 847, 1039, 1238, 1507, 1794, 2167, 2573, 3094, 3660, 4378, 5170

Réf. PSPM 19 172 71.

**HIS2** A2866 Dérivée logarithmique f.g. exponentielle

**HIS1** N1463 Fraction rationnelle

$$a(n) = 2^{n-1} (n+1)$$

$$\frac{1}{(1 - 2z)^2}$$

1, 4, 24, 192, 1920, 23040, 322560, 5160960, 92897280, 1857945600,  
40874803200, 980995276800, 25505877196800, 714164561510400,  
21424936845312000, 685597979049984000

Réf. PSPM 19 172 71.

**HIS2** A2867 Dérivée logarithmique Suite P-récurrente

**HIS1** N0806 algébrique f.g. exponentielle

$$a(n) = 2 a(n - 1) + (4 n^2 - 12 n + 8) a(n - 2)$$

$$\frac{1}{(1 - 2z)^{3/2} (2z + 1)^{1/2}}$$

1, 2, 12, 72, 720, 7200, 100800, 1411200, 25401600, 457228800,  
10059033600, 221298739200, 5753767219200, 149597947699200,  
4487938430976000, 134638152929280000

**Sorting numbers**

Réf. PSPM 19 173 71.

**HIS2** A2871 équations différentielles Formule de B. Salvy

**HIS1** N0483 exponentielle

$$\exp(1/2 \exp(2 z) + \exp(z) - 3/2)$$

1, 2, 4, 12, 48, 200, 1040, 5600, 33600

**Sorting numbers**

Réf. PSPM 19 173 71.

**HIS2** A2874 équations différentielles Formule de B. Salvy

**HIS1** N0738 exponentielle

$$\exp(1/3 \exp(3 z) + \exp(z) - 4/3)$$

1, 2, 8, 42, 268, 1994, 16852

## Bisection of Lucas sequence

Réf. FQ 9 284 71.

**HIS2** A2878      Approximants de Padé

**HIS1** N1384      Fraction rationnelle

$$\frac{1 + z}{1 - 3z + z^2}$$

1, 4, 11, 29, 76, 199, 521, 1364, 3571, 9349, 24476, 64079, 167761, 439204, 1149851, 3010349, 7881196, 20633239, 54018521, 141422324, 370248451, 969323029

Réf. AIP 9 345 60. SIAR 17 168 75.

**HIS2** A2893      P-réurrences      Suite P-récurrente

**HIS1** N1214

$a(n) = C(n,k)^2 \cdot C(2k,k), k=0..n$

$$(n-1)^2 a(n) = (10n^2 - 30n + 23) a(n-1) + (-9n^2 + 36n - 36) a(n-2)$$

1, 3, 15, 93, 639, 4653, 35169, 272835, 2157759, 17319837, 140668065, 1153462995, 9533639025, 79326566595, 663835030335, 5582724468093, 47152425626559, 399769750195965



**2n-step polygons on square lattice**

Réf. AIP 9 345 60.

**HIS2** A2894 hypergéométrique Suite P-récurrente**HIS1** N1490 Intégrales elliptiques

$${}_2F_1 \left( \left[ \frac{1}{2}, \frac{1}{2} \right], [1], 16z \right)$$

1, 4, 36, 400, 4900, 63504, 853776

**2n-step polygons on b.c.c. lattice**

Réf. AIP 9 345 60.

**HIS2** A2897 hypergéométrique Suite P-récurrente**HIS1** N1952 Intégrales elliptiques

$${}_3F_2 \left( \left[ \frac{1}{2}, \frac{1}{2}, \frac{1}{2} \right], [1, 1], 64z \right)$$

1, 8, 216, 8000, 343000, 16003008, 788889024

Réf. JALG 20 173 72.

HIS2 A2965 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 2z + z^2 + z^3}{1 - 2z - z^4}$$

1, 2, 3, 5, 7, 12, 17, 29, 41, 70, 99, 169, 239, 408, 577, 985, 1393, 2378, 3363, 5741, 8119, 13860, 19601, 33461, 47321, 80782, 114243, 195025, 275807, 470832

### Problèmes (second definition)

Réf. AMM 80 677 73.

HIS2 A3067 Approximants de Padé

HIS1 Fraction rationnelle

Conjecture seulement , le dernier terme aurait dû être : 89

$$\frac{z^9 + z^5 + z^2 + 2}{(z - 1)^2}$$

2, 4, 7, 10, 13, 17, 21, 25, 29, 34, 39, 44, 49, 54, 59, 64, 69, 74, 79, 84, 90

### Partitions of $n$ into parts $6n+1$ or $6n-1$

Réf.

HIS2 A3105

Euler

HIS1

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^{c(n)})}$$

$$c(n) = n \text{ congru à } 1, 5 \text{ mod } 6$$

1, 1, 1, 1, 1, 2, 2, 3, 3, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20, 23, 26, 30, 34, 38, 42, 47, 53, 60, 67, 74, 82, 91, 102, 114, 126, 139, 153, 169, 187, 207, 228, 250, 274, 301, 331, 364

### Partitions of $n$ into parts $5n+2$ or $5n+3$

Réf. AN76 238. AMM 95 711 88; 96 403 89.

HIS2 A3106

Euler

HIS1

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^{c(n)})}$$

$$c(n) = n \text{ congru à } 2, 3 \text{ mod } 5$$

1, 0, 1, 1, 1, 1, 2, 2, 3, 3, 4, 4, 6, 6, 8, 9, 11, 12, 15, 16, 20, 22, 26, 29, 35, 38, 45, 50, 58, 64, 75, 82, 95, 105, 120, 133, 152, 167, 190, 210, 237, 261, 295, 324, 364, 401, 448, 493, 551

### Partitions of n into Fibonacci parts

Réf.

HIS2 A3107

Euler

HIS1

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^{c(n)})}$$

**c(n) = Nombres de Fibonacci.**

1, 1, 2, 3, 4, 6, 8, 10, 14, 17, 22, 27, 33, 41, 49, 59, 71, 83, 99, 115, 134, 157, 180, 208, 239, 272, 312, 353, 400, 453, 509, 573, 642, 717, 803, 892, 993, 1102, 1219, 1350

### Partitions of n into cubes

Réf.

HIS2 A3108

Euler

HIS1

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^{c(n)})}$$

**c(n) = 1, 8, 27, 64, ... Cubes**

1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2, 3, 3, 3, 3, 3, 3, 3, 3, 4, 4, 4, 5, 5, 5, 5, 5, 6, 6, 6, 7, 7, 7, 7, 7, 8, 8, 8, 9, 9, 9, 9, 9, 10, 10, 10, 11, 11, 11, 12, 12, 13, 13, 13, 14, 14, 14, 15, 15, 17, 17

### Partitions of $n$ into parts $5n+1$ and $5n-1$

Réf. AN76 238. AMM 95 711 88; 96 403 89.

HIS2 A3114 Euler

HIS1 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^{c(n)})}$$

$$c(n) = n \text{ congru à } 1, 4 \text{ mod } 5$$

1, 1, 1, 1, 2, 2, 3, 3, 4, 5, 6, 7, 9, 10, 12, 14, 17, 19, 23, 26, 31, 35, 41, 46, 54, 61, 70, 79, 91, 102, 117, 131, 149, 167, 189, 211, 239, 266, 299, 333, 374, 415, 465, 515, 575, 637

### Arborescences of type $(n,1)$

Réf. DM 5 197 73.

HIS2 A3120 Approximants de Padé Conjecture

HIS1 Fraction rationnelle

$$\frac{(z - 1) (3z^2 + z - 1)}{1 - 3z - z^2 + 7z^3 - 3z^4}$$

1, 1, 2, 3, 7, 13, 31, 66, 159

Réf. KN1 3 207.

HIS2 A3143 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z^3 - z^4 + z^5 - z^6 + z^7}{(z - 1)(1 - z + z^2)(z^2 + z + 1)(-1 + 2z^2)}$$

1, 1, 2, 3, 4, 6, 9, 13, 19, 27, 38, 54, 77, 109, 155, 219, 310, 438, 621, 877, 1243, 1755, 2486, 3510, 4973, 7021, 9947, 14043, 19894, 28086, 39789, 56173, 79579, 112347

Réf. FQ 10 171 72.

HIS2 A3148 Dérivée logarithmique Suite P-récurrente

HIS1 algébrique f.g. exponentielle

$$a(n) = a(n - 1) + (4n^2 - 14n + 12)a(n - 2)$$

$$\frac{1}{(1 - 2z)(1 + 2z)^{1/2}}$$

1, 1, 7, 27, 321, 2265, 37575, 390915, 8281665, 114610545, 2946939975, 51083368875, 1542234996225, 32192256321225, 1114841223671175

### Star numbers

Réf. GA88 20.

HIS2 A3154 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 + 10z + 1}{(1 - z)^3}$$

1, 13, 37, 73, 121, 181, 253, 337, 433, 541, 661, 793, 937, 1093, 1261, 1441, 1633, 1837, 2053, 2281, 2521, 2773, 3037, 3313, 3601, 3901, 4213, 4537, 4873, 5221, 5581

### If n appears, 2n doesn't

Réf. FQ 10 501 72. AMM 87 671 80.

HIS2 A3159

Euler

Suite reliée à la suite de

HIS1

Produit infini

Thue-Morse.

\* Voir [AABBJPS]

$$\frac{(1 + Z) \prod_{n \geq 0} (1 + Z^{c(n)})}{(1 - Z)}$$

$$c(n) = 1, 3, 5, 11, 21, 43, 85, 171, \dots *$$

1, 3, 4, 5, 7, 9, 11, 12, 13, 15, 16, 17, 19, 20, 21, 23, 25, 27, 28, 29, 31, 33, 35, 36, 37, 39, 41, 43, 44, 45, 47, 48, 49, 51, 52, 53, 55, 57, 59, 60, 61, 63, 64, 65, 67, 68, 69, 71

$$C(n,k) \cdot C(2n+k, k-1) / n, \quad k=1 \dots n$$

Réf. FQ 11 123 73.

**HIS2** A3168

Inverse fonctionnel

Suite p-récurrente

**HIS1**

algébrique

Inverse ordinaire de A3169

L'inverse fonctionnel est rationnel.

Solution de

$$\left( \frac{z}{(1+2z)(z+1)^2} \right) \langle -1 \rangle$$

1, 1, 4, 21, 126, 818, 5594, 39693, 289510, 2157150, 16348960, 125642146,  
976789620, 7668465964, 60708178054, 484093913917, 3884724864390

### 2-line arrays

Réf. FQ 11 124 73; 14 232 76.

**HIS2** A3169

Inverse fonctionnel

Suite p-récurrente

**HIS1**

algébrique

Inverse ordinaire de A3168

Solution de

$$\left( \frac{1+z}{3-2z+z^2} \right) \langle -1 \rangle$$

1, 3, 14, 79, 494, 3294, 22952, 165127, 1217270, 9146746, 69799476,  
539464358, 4214095612, 33218794236, 263908187100, 2110912146295,  
16985386737830



**Hex numbers**

Réf. INOC 24 4550 85. AMM 95 701 88. GA88 18.

**HIS2** A3215 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{1 + 4z + z^2}{(1 - z)^3}$$

1, 7, 19, 37, 61, 91, 127, 169, 217, 271, 331, 397, 469, 547, 631, 721, 817,  
919, 1027, 1141, 1261, 1387, 1519, 1657, 1801, 1951, 2107, 2269, 2437,  
2611, 2791, 2977

**Even permutations of length n with no fixed points**

Réf. AMM 79 394 72.

**HIS2** A3221 Dérivée logarithmique Suite P-récurrente

**HIS1** exponentielle

$a(n) = 3n a(n-2) + (n-1)a(n-1) + (3n-1)a(n-3) + (n-1)a(n-4)$

$$\frac{4 - 6z + 16z^2 - 13z^3 + 6z^4 - z^5}{2(z-1)^4 \exp(z)}$$

0, 0, 2, 3, 24, 130, 930, 7413, 66752, 667476, 7342290, 88107415,  
1145396472, 16035550518, 240533257874, 3848532125865,  
65425046139840, 1177650830516968

Réf. DT76.

HIS2 A3229 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 2z^2}{1 - z - 2z^3}$$

1, 1, 3, 5, 7, 13, 23, 37, 63, 109, 183, 309, 527, 893, 1511, 2565, 4351, 7373,  
12503, 21205, 35951, 60957, 103367, 175269, 297183, 503917, 854455,  
1448821, 2456655

Réf. DT76.

HIS2 A3230 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1}{(z - 1)(2z - 1)(1 - z - 2z^3)}$$

1, 4, 11, 28, 67, 152, 335, 724, 1539, 3232, 6727, 13900, 28555, 58392,  
118959, 241604, 489459, 989520, 1997015, 4024508, 8100699, 16289032,  
32726655, 65705268, 131837763

### Partially achiral planted trees

Réf. JRAM 278 334 75.

**HIS2** A3237 Approximants de Padé conjecture faible

**HIS1** Fraction rationnelle

$$\frac{z \left( 1 - z^2 - z^3 - z^4 + z^5 \right)}{1 - z - 2z^2 + 3z^5}$$

0, 1, 1, 2, 3, 6, 10, 19, 33, 62, 110, 204

### Partially achiral trees

Réf. JRAM 278 334 75.

**HIS2** A3243 Approximants de Padé conjecture faible

**HIS1** Fraction rationnelle

$$\frac{1 - z^2 - 2z^3 - 8z^4 + 7z^5 + 4z^6}{1 - z - z^2 - 2z^3 - 6z^4 + 14z^5}$$

1, 1, 1, 2, 3, 6, 9, 19, 30, 61, 99, 208

### Related to Fibonacci representations

Réf. FQ 11 386 73.

**HIS2** A3253 Approximants de Padé conjecture seulement

**HIS1** Fraction rationnelle

$$\frac{1 + z + z^2 + z^{15} - z^{16}}{1 - z - z^2 + z^3}$$

1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, 24, 25, 27, 28, 30, 31, 33, 34, 36, 37, 39, 40, 42, 43, 45, 46, 48, 49, 51, 52, 54, 55, 57, 58, 60, 62, 63, 65, 66, 68, 69, 71, 72

### Woodall numbers

Réf. BR73 159.

**HIS2** A3261 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{1 + 2z - 4z^2}{(1 - z)(2z - 1)^2}$$

1, 7, 23, 63, 159, 383, 895, 2047, 4607, 10239, 22527, 49151, 106495, 229375, 491519, 1048575, 2228223, 4718591, 9961471, 20971519, 44040191, 92274687

Réf. BR72 120.

HIS2 A3269 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1}{1 - z - z^4}$$

1, 1, 1, 1, 2, 3, 4, 5, 7, 10, 14, 19, 26, 36, 50, 69, 95, 131, 181, 250, 345, 476, 657, 907, 1252, 1728, 2385, 3292, 4544, 6272, 8657, 11949, 16493, 22765, 31422, 43371, 59864

### Key permutations of length n

Réf. CJN 14 152 71.

HIS2 A3274 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - z + 3z^2 - 2z^3 + z^5}{(1 - z - z^3)(z - 1)^2}$$

1, 2, 6, 12, 20, 34, 56, 88, 136, 208, 314, 470, 700, 1038, 1534, 2262, 3330, 4896, 7192, 10558, 15492, 22724, 33324, 48860, 71630, 105002, 153912, 225594, 330650

**4-line partitions of n decreasing across rows**

Réf. MOC 26 1004 72.

HIS2 A3292

Euler

HIS1

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, 1, 2, 2, 2, 2, \dots$$

1, 2, 4, 7, 11, 19, 29, 46, 70, 106, 156, 232, 334, 482, 686, 971, 1357, 1894, 2612, 3592, 4900, 6656, 8980, 12077, 16137, 21490, 28476, 37600, 49422, 64763, 84511

**Planar partitions of n decreasing across rows**

Réf. MOC 26 1004 72.

HIS2 A3293

Euler

HIS1

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, 1, 2, 2, 3, 3, 4, 4, 5, 5, 6, 6, \dots$$

1, 2, 4, 7, 12, 21, 34, 56, 90, 143, 223, 348, 532, 811, 1224, 1834, 2725, 4031, 5914, 8638, 12540, 18116, 26035, 37262, 53070, 75292, 106377, 149738, 209980

### Certain triangular arrays of integers

Réf. P4BC 112.

HIS2 A3402

Euler

HIS1

Fraction rationnelle

$$\frac{1}{(1-z)(1-z^2)(1-z^3)(1-z^4)(1-z^5)}$$

1, 1, 2, 4, 6, 9, 14, 19, 27, 37, 49, 64, 84, 106, 134, 168, 207, 253, 309, 371, 445, 530, 626, 736, 863, 1003, 1163, 1343, 1543, 1766, 2017, 2291, 2597, 2935, 3305, 3712, 4161

### Certain triangular arrays of integers

Réf. P4BC 118.

HIS2 A3403

Euler

HIS1

Fraction rationnelle

\* c(n) : suite finie.

$$\prod_{n \geq 1} \frac{1}{(1-z^n)^{c(n)}}$$

$$c(n) = 1, 1, 2, 2, 2, 1, 1, *$$

1, 1, 2, 4, 7, 11, 18, 27, 41, 60, 87, 122, 172, 235, 320, 430, 572, 751, 982, 1268, 1629, 2074, 2625, 3297, 4123, 5118, 6324, 7771, 9506, 11567, 14023, 16917, 20335

### Connected ladder graphs with n nodes

Réf. DM 9 355 74.

HIS2 A3409

Recouvrements

Suite P-récurrente

HIS1

algébrique

6

$$\frac{(1 - 4z)^{1/2} (1 + (1 - 4z)^{1/2})}{(1 - 4z)^{1/2} (1 + (1 - 4z)^{1/2})}$$

3, 9, 30, 105, 378, 1386, 5148, 19305

Réf. rkg.

HIS2 A3410

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{(1 + z) (1 + z^2)}{1 + z + z^3}$$

1, 2, 3, 5, 7, 10, 15, 22, 32, 47, 69, 101, 148, 217, 318, 466, 683, 1001, 1467, 2150, 3151, 4618, 6768, 9919, 14537, 21305, 31224, 45761, 67066, 98290, 144051, 211117



Réf. rkg.

**HIS2** A3411

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{z^4 + z^3 + z^2 + z + 1}{1 + z + z^4}$$

1, 2, 3, 4, 6, 8, 11, 15, 21, 29, 40, 55, 76, 105, 145, 200, 276, 381, 526, 726, 1002, 1383, 1909, 2635, 3637, 5020, 6929, 9564, 13201, 18221, 25150, 34714, 47915, 66136

### From a nim-like game

Réf. rkg.

**HIS2** A3413

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{(z^5 + z^3 + 1)(z^2 + z + 1)}{z^6 + z - 1}$$

1, 2, 3, 4, 5, 7, 9, 12, 15, 19, 24, 31, 40, 52, 67, 86, 110, 141, 181, 233, 300, 386, 496, 637, 818, 1051, 1351, 1737, 2233, 2870, 3688, 4739, 6090, 7827, 10060, 12930

### Continued fraction expansion of $e = \exp(1)$

Réf. PE29 134.

HIS2 A3417 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2 + z + 2z^2 - 3z^3 - z^4 + z^6}{(z-1)^2(z^2+z+1)^2}$$

2, 1, 2, 1, 1, 4, 1, 1, 6, 1, 1, 8, 1, 1, 10, 1, 1, 12, 1, 1, 14, 1, 1, 16, 1, 1, 18, 1, 1, 20, 1, 1, 22, 1, 1, 24, 1, 1, 26, 1, 1, 28, 1, 1, 30, 1, 1, 32, 1, 1, 34, 1, 1, 36, 1, 1, 38, 1, 1, 40, 1, 1, 42

### Hamiltonian circuits on n-octahedron

Réf. JCT B19 2 75.

HIS2 A3436 P-réurrences Suite P-récurrente

HIS1 exponentielle (algébrique)

Une relation élémentaire existe avec A0806.

$$a(n) = (2n + 2) a(n - 1) - a(n - 3) + (-2n + 4) a(n - 2)$$

1, 4, 31, 293, 3326, 44189, 673471, 11588884, 222304897, 4704612119, 108897613826, 2737023412199, 74236203425281, 2161288643251828

### Dissections of a polygon

Réf. AEQ 18 387 78.

HIS2 A3451 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 - 2z - 1}{(z - 1)^4 (z + 1)^2}$$

1, 4, 8, 16, 25, 40, 56, 80, 105, 140, 176, 224

### Dissections of a polygon

Réf. AEQ 18 388 78.

HIS2 A3453 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 - z - 1}{(z - 1)^4 (z + 1)^2}$$

1, 3, 6, 11, 17, 26, 36, 50, 65, 85, 106, 133

**Bode numbers****Réf.** SKY 43 281 72. MCL1.**HIS2** A3461      Approximants de Padé**HIS1**              Fraction rationnelle

$$\frac{4 - 5z - 3z^2}{(2z - 1)(z - 1)}$$

4, 7, 10, 16, 28, 52, 100, 196, 388, 772, 1540, 3076, 6148, 12292, 24580,  
 49156, 98308, 196612, 393220, 786436, 1572868, 3145732, 6291460,  
 12582916, 25165828

**Réf.** RI89 60.**HIS2** A3462      Approximants de Padé**HIS1**              Fraction rationnelle

$$\frac{1}{(1 - z)(1 - 3z)}$$

1, 4, 13, 40, 121, 364, 1093, 3280, 9841, 29524, 88573, 265720, 797161,  
 2391484, 7174453, 21523360, 64570081, 193710244, 581130733,  
 1743392200, 5230176601

### Minimal covers of an n-set

Réf. DM 5 249 73.

**HIS2** A3467

P-réurrences

Suite P-récurrente

**HIS1**

Fraction rationnelle

Formule de B. Salvy

$$(n - 1) (n - 2) a(n) = (n + 2) (5n - 10) a(n - 1) + (n + 2) (-4n - 4) a(n - 2)$$

$$1 + \frac{1}{(4z - 1)^4} + \frac{3}{(z - 1)^4}$$

5, 28, 190, 1340, 9065, 57512, 344316, 1966440, 10813935, 57672340,  
299893594, 1526727748, 7633634645, 37580965520, 182536112120,  
876173330832

### Minimal covers of an n-set

Réf. DM 5 249 73.

**HIS2** A3468

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{1}{(1 - 4z)(1 - 5z)(1 - 6z)(1 - 7z)}$$

1, 22, 305, 3410, 33621, 305382, 2619625, 21554170, 171870941,  
1337764142, 10216988145, 76862115330, 571247591461, 4203844925302,  
30687029023865

### Minimal covers of an n-set

Réf. DM 5 249 73.

HIS2 A3469 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - z - z^2}{(2z - 1)(1 - z)^3}$$

1, 6, 22, 65, 171, 420, 988, 2259, 5065, 11198, 24498, 53157, 114583,  
245640, 524152, 1113959, 2359125, 4980546, 10485550, 22019865,  
46137091, 96468716

Réf. PRSE 62 190 46. AS1 796. MFM 74 62 70 (divided by 2).

HIS2 A3472 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1}{(1 - 2z)^5}$$

1, 10, 60, 280, 1120, 4032, 13440, 42240, 126720, 366080, 1025024,  
2795520, 7454720, 19496960, 50135040, 127008768, 317521920,  
784465920, 1917583360

Réf. DT76.

HIS2 A3476

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + z + z^2}{1 - z - 2z^3}$$

1, 2, 3, 5, 9, 15, 25, 43, 73, 123, 209, 355, 601, 1019, 1729, 2931, 4969, 8427, 14289, 24227, 41081, 69659, 118113, 200275, 339593, 575819, 976369, 1655555

Réf. DT76.

HIS2 A3477

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1}{(1 - 2z)(1 - z - 2z^3)(1 + z^2)}$$

1, 3, 6, 14, 33, 71, 150, 318, 665, 1375, 2830, 5798, 11825, 24039, 48742, 98606, 199113, 401455, 808382, 1626038, 3267809, 6562295, 13169814, 26416318, 52962681

Réf. DT76.

HIS2 A3478

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1}{(1 - 2z) (1 - z - 2z^3)}$$

1, 3, 7, 17, 39, 85, 183, 389, 815, 1693, 3495, 7173, 14655, 29837, 60567,  
122645, 247855, 500061, 1007495, 2027493, 4076191, 8188333, 16437623,  
32978613, 66132495

Réf. DT76.

HIS2 A3479

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1}{(1 - z) (1 - z - 2z^3)}$$

1, 2, 3, 6, 11, 18, 31, 54, 91, 154, 263, 446, 755, 1282, 2175, 3686, 6251,  
10602, 17975, 30478, 51683, 87634, 148591, 251958, 427227, 724410,  
1228327, 2082782



Réf. MOC 29 220 75. DM 75 95 89.

HIS2 A3480 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(z - 1)^2}{1 - 4z + 2z^2}$$

1, 2, 7, 24, 82, 280, 956, 3264, 11144, 38048, 129904, 443520, 1514272,  
5170048, 17651648, 60266496, 205762688, 702517760, 2398545664,  
8189147136, 27959497216

Réf. DM 9 89 74.

HIS2 A3481 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2 + 4z - z^2}{1 - 8z + 8z^2 - z^3}$$

2, 20, 143, 986, 6764, 46367, 317810, 2178308, 14930351, 102334154,  
701408732, 4807526975, 32951280098, 225851433716, 1548008755919

Réf. DM 9 89 74.

HIS2 A3482 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{5 - z}{1 - 8z + 8z^2 - z^3}$$

0, 5, 39, 272, 1869, 12815, 87840, 602069, 4126647, 28284464, 193864605, 1328767775, 9107509824, 62423800997, 427859097159, 2932589879120

### Hurwitz-Radon function at powers of 2

Réf. LA73a 131.

HIS2 A3485 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z + 2z^2 + 4z^3}{(1 - z)(1 - z^4)}$$

1, 2, 4, 8, 9, 10, 12, 16, 17, 18, 20, 24, 25, 26, 28, 32, 33, 34, 36, 40, 41, 42, 44, 48, 49, 50, 52, 56, 57, 58, 60, 64, 65, 66, 68, 72, 73, 74, 76, 80, 81, 82, 84, 88, 89, 90, 92, 96

**Réf.** B1 198. MMAG 48 209 75.

**HIS2** A3499      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{2 - 6z}{1 - 6z + z^2}$$

2, 6, 34, 198, 1154, 6726, 39202, 228486, 1331714, 7761798, 45239074,  
263672646, 1536796802, 8957108166, 52205852194, 304278004998,  
1773462177794

**Réf.** FQ 11 29 73. MMAG 48 209 75.

**HIS2** A3500      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{2 - 4z}{1 - 4z + z^2}$$

2, 4, 14, 52, 194, 724, 2702, 10084, 37634, 140452, 524174, 1956244,  
7300802, 27246964, 101687054, 379501252, 1416317954, 5285770564,  
19726764302

Réf. MMAG 48 209 75.

**HIS2** A3501 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{2 - 5z}{1 - 5z + z^2}$$

2, 5, 23, 110, 527, 2525, 12098, 57965, 277727, 1330670, 6375623,  
30547445, 146361602, 701260565, 3359941223, 16098445550,  
77132286527, 369562987085

### Binomial coefficients C (2n + 1, n - 2)

Réf. AS1 828.

**HIS2** A3516 Hypergéométrique Suite P-récurrente

**HIS1** algébrique

${}_2F_1([3, 7/2], [6], 4z)$

$$\frac{32}{(1 - 4z)^{1/2} (1 + (1 - 4z)^{1/2})^5}$$

1, 7, 36, 165, 715, 3003, 12376, 50388, 203490, 817190, 3268760, 13037895,  
51895935, 206253075, 818809200, 3247943160, 12875774670, 51021117810

### Binomial coefficients $6C(2n+1, n-2)/(n+4)$

Réf. FQ 14 397 76. DM 14 84 76.

**HIS2** A3517      Hypergéométrique      Suite P-récurrente

**HIS1**                      algébrique

${}_2F_1([3, 7/2], [7], 4z)$

$$\frac{64}{(1 + (1 - 4z)^{1/2})^6}$$

1, 6, 27, 110, 429, 1638, 6188, 23256, 87210, 326876, 1225785, 4601610,  
17298645, 65132550, 245642760, 927983760, 3511574910, 13309856820,  
50528160150

### Binomial coefficients $8C(2n+1, n-3)/(n+5)$

Réf. FQ 14 397 76. DM 14 84 76.

**HIS2** A3518      Hypergéométrique      Suite P-récurrente

**HIS1**                      algébrique

${}_2F_1([9/2, 4], [9], 4z)$

$$\frac{256z}{(1 + (1 - 4z)^{1/2})^8}$$

1, 8, 44, 208, 910, 3808, 15504, 62016, 245157, 961400, 3749460, 14567280,  
56448210, 218349120, 843621600, 3257112960, 12570420330, 48507033744

### Binomial coefficients $10C(2n+1, n-4)/(n+6)$

Réf. FQ 14 397 76.

**HIS2** A3519      Hypergéométrique      Suite P-récurrente

**HIS1**                      algébrique

${}_2F_1([11/2, 5], [11], 4z)$

$$\frac{1024}{(1 + (1 - 4z)^{1/2})^{10}}$$

1, 10, 65, 350, 1700, 7752, 33915, 144210, 600875, 2466750, 10015005,  
40320150, 161280600, 641886000, 2544619500, 10056336264, 39645171810

Réf. BR72 119. FQ 14 38 76.

**HIS2** A3520      Approximants de Padé

**HIS1**                      Fraction rationnelle

$$\frac{1}{(1 - z^2 - z^3)(1 - z + z^2)}$$

1, 1, 1, 1, 1, 2, 3, 4, 5, 6, 8, 11, 15, 20, 26, 34, 45, 60, 80, 106, 140, 185, 245,  
325, 431, 571, 756, 1001, 1326, 1757, 2328, 3084, 4085, 5411, 7168, 9496,  
12580, 16665, 22076, 29244

Réf. BR72 113.

HIS2 A3522 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(z - 1)^2}{1 - 3z + 3z^2 - z^3 - z^4}$$

1, 1, 1, 1, 2, 5, 11, 21, 37, 64, 113, 205, 377, 693, 1266, 2301, 4175, 7581, 13785, 25088, 45665, 83097, 151169, 274969, 500162, 909845, 1655187, 3011157, 5477917, 9965312

Réf. JCT A29 122 80. MOC 37 479 81.

HIS2 A4004 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z(1 + 3z)}{(1 - 9z^2)(z - 1)^2}$$

0, 1, 14, 135, 1228, 11069, 99642, 896803, 8071256, 72641337, 653772070, 5883948671, 52955538084, 476599842805, 4289398585298, 38604587267739, 347441285409712, 3126971568687473

### Coefficients of elliptic function sn

Réf. CA95 56. TM93 4 92. JCT A29 122 80. MOC 37 480 81.

HIS2 A4005 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 89z - 69z^2 - 405z^3}{(1-z)^3(1-9z)^2(1-25z)}$$

1, 135, 5478, 165826, 4494351, 116294673, 2949965020, 74197080276,  
1859539731885, 46535238000235, 1163848723925346,  
29100851707716150, 727566807977891803

### Theta series of square lattice

Réf. SPLAG 106.

HIS2 A4018 Euler

HIS1 Produit infini

\* Le motif [4, -6, 4, -2] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 4, -6, 4, -2, \dots *$$

1, 4, 4, 0, 4, 8, 0, 0, 4, 4, 8, 0, 0, 8, 0, 0, 4, 8, 4, 0, 8, 0, 0, 0, 0, 12, 8, 0, 0, 8, 0,  
0, 4, 0, 8, 0, 4, 8, 0, 0, 8, 8, 0, 0, 0, 8, 0, 0, 0, 4, 12, 0, 8, 8, 0, 0, 0, 0, 8, 0, 0, 8,  
0, 0, 4, 16, 0, 0, 8, 0



### Theta series of square lattice w.r.t. edge.

Réf. SPLAG 106.

HIS2 A4020

Euler

HIS1

Produit infini

\* Le motif [2, -2] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, -2, \dots *$$

2, 4, 2, 4, 4, 0, 6, 4, 0, 4, 4, 4, 2, 4, 0, 4, 8, 0, 4, 0, 2, 8, 4, 0, 4, 4, 0, 4, 4, 4, 2,  
8, 0, 0, 4, 0, 8, 4, 4, 4, 0, 0, 6, 4, 0, 4, 8, 0, 4, 4, 0, 8, 0, 0, 0, 8, 6, 4, 4, 0, 4, 4,  
0, 0, 4, 4, 8, 4

### Theta series of b.c.c. lattice w.r.t. deep hole

Réf. JCP 83 6532 85.

HIS2 A4024

Euler

HIS1

Produit infini

\* Le motif [1, 1, 1, -3] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, 1, 1, -3, \dots *$$

4, 4, 8, 12, 4, 12, 12, 12, 16, 16, 8, 8, 28, 12, 20, 24, 8, 16, 28, 12, 16, 28, 20,  
32, 20, 16, 16, 32, 20, 24, 28, 8, 36, 44, 12, 32, 36, 16, 24, 20, 28, 20, 56, 28,  
16, 40, 20, 40, 44, 12

### Theta series of b.c.c. lattice w.r.t. long edge

Réf. JCP 6532 85.

HIS2 A4025 Euler

HIS1 Produit infini

\* Le motif [2, -3, 2, 1, 2, -3, 2, -3] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, -3, 2, 1, 2, -3, 2, -3, \dots *$$

2, 4, 0, 0, 8, 8, 0, 0, 10, 8, 0, 0, 8, 16, 0, 0, 16, 12, 0, 0, 16, 8, 0, 0, 10, 24, 0, 0,  
24, 16, 0, 0, 16, 16, 0, 0, 8, 24, 0, 0, 32, 16, 0, 0, 24, 16, 0, 0, 18, 28, 0, 0, 24,  
32, 0, 0, 16, 8, 0

Réf. AMM 87 206 80.

HIS2 A4116 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^3 - z - 1}{(1 + z)^3 (z - 1)^3}$$

1, 3, 6, 9, 13, 17, 22, 27, 33, 39, 46, 53, 61, 69, 78, 87, 97, 107, 118, 129, 141,  
153, 166, 179, 193, 207, 222, 237, 253, 269, 286, 303, 321, 339, 358, 377,  
397, 417, 438, 459

Réf. MOC 30 660 76.

HIS2 A4119 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z - 3z^2}{(2z - 1)(z - 1)}$$

1, 4, 7, 13, 25, 49, 97, 193, 385, 769, 1537, 3073, 6145, 12289, 24577, 49153, 98305, 196609, 393217, 786433, 1572865, 3145729, 6291457, 12582913, 25165825

Réf. SIAR 12 296 70.

HIS2 A4120 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z - z^5}{(1 - z)^3}$$

1, 4, 9, 16, 25, 35, 46, 58, 71, 85, 100, 116, 133, 151, 170, 190, 211

### Postage stamp problem

Réf. SIAA 1 383 80.

HIS2 A4129 Approximants de Padé Conjecture

HIS1 Fraction rationnelle

$$\frac{(z^4 + z^3 + 2z^2 + 2z + 1)(z^2 + z + 1)}{(z - 1)(z^5 + z^4 + z^3 - z - 1)}$$

1, 3, 6, 9, 13, 17, 22, 27, 33, 40, 47, 56, 65

### A counter moving problem

Réf. BA62 38.

HIS2 A4138 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - z^2 + 4z^3 - 2z^4}{(z - 1)(2z^4 - z^3 + z^2 + z - 1)}$$

1, 2, 3, 8, 13, 24, 37, 66, 107, 186, 303, 516, 849, 1436, 2377, 3998, 6639, 11134, 18531, 31024, 51701, 86464, 144205, 241018, 402163, 671906, 1121463, 1873244

### Alternate Lucas numbers - 2

Réf. FQ 13 51 75.

**HIS2** A4146      Approximants de Padé      Suite P-récurrente  
**HIS1**              fraction rationnelle      Suite corrigée au 12<sup>e</sup> terme.

$$\frac{1 + z}{1 - 4z + 4z^2 - z^3}$$

1, 5, 16, 45, 121, 320, 841, 2205, 5776, 15125, 39601, 103680\*, 271441,  
 710645, 1860496, 4870845, 12752041, 33385280, 87403801, 228826125,  
 599074576

### Generalized Catalan numbers

Réf. DM 26 264 79. JCT B29 89 80.

**HIS2** A4148              LLL              Suite P-récurrente  
**HIS1**                      algébrique

$$(n + 2) a(n) = (4 - n) a(n - 4) + (2n + 1) a(n - 1) \\
+ (n - 1) a(n - 2) + (2n - 5) a(n - 3)$$

$$\frac{1 - z - z^2 - (1 - 2z - z^2 - 2z^3 + z^{4/2})}{2z^3}$$

1, 1, 2, 4, 8, 17, 37, 82, 185, 423, 978, 2283, 5373, 12735, 30372, 72832,  
 175502, 424748, 1032004, 2516347

**Related to symmetric groups**

Réf. DM 21 320 78.

**HIS2** A4211 équations différentielles Formule de B. Salvy

**HIS1** exponentielle

$$\exp(1/2 \exp(2 z) + 2 z - 1/2)$$

1, 3, 11, 49, 257, 1539, 10299, 75905

**Related to symmetric groups**

Réf. DM 21 320 78.

**HIS2** A4212 équations différentielles Formule de B. Salvy

**HIS1** exponentielle

$$\exp(1/3 \exp(3 z) + 3 z - 1/3)$$

1, 4, 19, 109, 742, 5815, 51193, 498118

**Related to symmetric groups**

Réf. DM 21 320 78.

**HIS2** A4213 équations différentielles Formule de B. Salvy**HIS1** exponentielle

$$\exp(1/4 \exp(4 z) + 4 z - 1/4)$$

1, 5, 29, 201, 1657, 15821, 170389, 2032785

**Pythagoras theorem generalized**

Réf. BU71 75.

**HIS2** A4253 Approximants de Padé**HIS1** Fraction rationnelle

$$\frac{1 - z}{1 - 5z + z^2}$$

1, 4, 19, 91, 436, 2089, 10009, 47956, 229771, 1100899, 5274724, 25272721, 121088881, 580171684, 2779769539, 13318676011, 63813610516, 305749376569

## Pythagoras theorem generalized

Réf. BU71 75.

HIS2 A4254

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1}{1 - 5z + z^2}$$

1, 5, 24, 115, 551, 2640, 12649, 60605, 290376, 1391275, 6665999,  
31938720, 153027601, 733199285, 3512968824, 16831644835,  
80645255351, 386394631920

Réf. dsk.

HIS2 A4255

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 - 2z + 4z^2}{(1 - z)^5}$$

1, 3, 9, 25, 60, 126, 238, 414, 675, 1045, 1551, 2223, 3094, 4200, 5580, 7276,  
9333, 11799, 14725, 18165, 22176, 26818, 32154, 38250, 45175, 53001,  
61803, 71659



Réf. JCT B21 75 76.

HIS2 A4303

LLL

Suite P-récurrente

HIS1

algébrique

$$(n + 1) a(n) = 68 n a(n - 5) - 16 n a(n - 6) + (11 n - 2) a(n - 1) \\ + (- 47 n + 61) a(n - 2) + (101 n - 240) a(n - 3) \\ + (- 116 n + 398) a(n - 4) - 304 a(n - 5) + 88 a(n - 6)$$

$$- 1/2 (- 1 + 10 z - 42 z^2 + 98 z^3 - 137 z^4 + 112 z^5 - 48 z^6 + 8 z^7) \\ + \frac{(z^2 (2 z - 1)^2 (z - 1)^4)}{(z^2 (2 z - 1)^2 (z - 1)^4)} \\ + \frac{(- (- 1 + 4 z) (2 z - 1)^4 (z - 1)^{8 1/2})}{(z^2 (2 z - 1)^2 (z - 1)^4)}$$

1, 1, 1, 3, 16, 75, 309, 1183, 4360, 15783, 56750, 203929, 734722, 2658071, 9662093, 35292151, 129513736, 477376575, 1766738922, 6563071865, 24464169890

### Davenport-Schinzel numbers

Réf. ARS 1 47 76. UPNT E20.

HIS2 A5004

Approximants de Padé

Conjecture

HIS1

Fraction rationnelle

$$\frac{(z^3 - z^2 + z + 1) (z^2 + z + 1)}{(1 + z) (z - 1)^2}$$

1, 3, 5, 8, 10, 14, 16, 20, 22, 26

**Related to symmetric groups**

Réf. DM 21 320 78.

**HIS2** A5011 équations différentielles Formule de B. Salvy

**HIS1** exponentielle

$$\exp(1/5 \exp(5 z) + 5 z - 1/5)$$

1, 6, 41, 331, 3176, 35451, 447981, 6282416

**Related to symmetric groups**

Réf. DM 21 320 78.

**HIS2** A5012 équations différentielles Formule de B. Salvy

**HIS1** exponentielle

$$\exp(1/6 \exp(6 z) + 6 z - 1/6)$$

1, 7, 55, 505, 5497, 69823, 1007407, 16157905

Réf. LNM 748 57 79.

HIS2 A5013 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 + z + 1}{(z^2 - z - 1)(z^2 + z - 1)}$$

0, 1, 1, 4, 3, 11, 8, 29, 21, 76, 55, 199, 144, 521, 377, 1364, 987, 3571, 2584, 9349, 6765, 24476, 17711, 64079, 46368, 167761, 121393, 439204, 317811, 1149851, 832040

### Random walks

Réf. DM 17 44 77.

HIS2 A5021 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 - z)(z - 5)}{1 - 5z + 6z^2 - z^3}$$

5, 19, 66, 221, 728, 2380, 7753, 25213, 81927, 266110, 864201, 2806272, 9112264, 29587889, 96072133, 311945595, 1012883066, 3288813893, 10678716664

**Random walks**

Réf. DM 17 44 77. TCS 9 105 79.

HIS2 A5022 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1}{(1 - 2z) (1 - 4z + 2z^2)}$$

1, 6, 26, 100, 364, 1288, 4488, 15504, 53296, 182688, 625184, 2137408,  
 7303360, 24946816, 85196928, 290926848, 993379072, 3391793664,  
 11580678656, 39539651584

**Random walks**

Réf. DM 17 44 77.

HIS2 A5023 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{7 - 15z + 10z^2 - z^3}{(1 - z) (z^3 - 9z^2 + 6z - 1)}$$

7, 34, 143, 560, 2108, 7752, 28101, 100947, 360526, 1282735, 4552624,  
 16131656, 57099056, 201962057, 714012495, 2523515514, 8916942687,  
 31504028992

### Random walks

Réf. DM 17 44 77.

HIS2 A5024 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{8 - 21z + 20z^2 - 5z^3}{(5z^2 - 5z + 1)(1 - 3z + z^2)}$$

8, 43, 196, 820, 3264, 12597, 47652, 177859, 657800, 2417416, 8844448,  
32256553, 117378336, 426440955, 1547491404, 5610955132, 20332248992

### Random walks

Réf. DM 17 44 77.

HIS2 A5025 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{9 - 28z + 35z^2 - 15z^3 + z^4}{1 - 9z + 28z^2 - 35z^3 + 15z^4 - z^5}$$

9, 53, 260, 1156, 4845, 19551, 76912, 297275, 1134705, 4292145, 16128061,  
60304951, 224660626, 834641671, 3094322026, 11453607152, 42344301686

Réf. JCT A23 293 77. JCP 67 5027 77. TAMS 272 406 82.

HIS2 A5043

LLL

Suite P-récurrente

HIS1

algébrique

$$(n + 2) a(n) = 2 n a(n - 1) + 3 n a(n - 2)$$

$$\frac{1 - z - 2z^2 - (1 - 2z - 3z^2)^{1/2}}{2(z^3 + z^4)}$$

0, 1, 1, 3, 6, 15, 36, 91, 232, 603, 1585, 4213, 11298, 30537, 83097, 227475, 625992, 1730787, 4805595, 13393689, 37458330, 105089229, 295673994, 834086421

Réf. AMM 86 477 79; 86 687 79.

HIS2 A5044

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1}{(1 + z^2)^2 (z^2 + z + 1) (1 + z^2)^2 (z - 1)^3}$$

1, 0, 1, 1, 2, 1, 3, 2, 4, 3, 5, 4, 7, 5, 8, 7, 10, 8, 12, 10, 14, 12, 16, 14, 19, 16, 21, 19, 24, 21, 27, 24, 30, 27, 33, 30, 37, 33, 40, 37, 44, 40, 48, 44, 52, 48, 56, 52, 61, 56, 65, 61, 70, 65

**3 times 3 matrices with row and column sums n**

Réf. MO78. NAMS 26 A-27 (763-05-13) 79.

HIS2 A5045 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^6 - z^5 + z^3 - z - 1}{(1+z)^2 (z^2+z+1)^2 (z-1)^5}$$

---


$$(1+z)^2 (z^2+z+1)^2 (z-1)^5$$

1, 3, 6, 10, 17, 25, 37, 51, 70, 92, 121, 153, 194, 240, 296, 358, 433, 515, 612, 718, 841, 975, 1129, 1295, 1484, 1688, 1917, 2163, 2438, 2732, 3058, 3406, 3789, 4197, 4644

**Minimal determinant of n-dimensional norm 3 lattice**

Réf. SPLAG 180.

HIS2 A5103 Approximants de Padé Conjecture

HIS1 Fraction rationnelle

$$\frac{1 + z + 2z^2 + 2z^3 + 6z^4}{1 - 2z + 2z^3}$$

---


$$1 - 2z + 2z^3$$

1, 3, 8, 16, 32, 48, 64, 64

Réf. clm.

**HIS2** A5126 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{z^2 - 4z + z^2}{(1 - 2z)(z - 1)^2}$$

2, 4, 7, 12, 21, 38, 71, 136, 265, 522, 1035, 2060, 4109, 8206, 16399, 32784, 65553, 131090, 262163, 524308, 1048597, 2097174, 4194327, 8388632, 16777241, 33554458, 67108891

Réf. CACM 23 704 76. LNM 829 122 80. MBIO 54 8 81.

**HIS2** A5172 équations différentielles Formule de B. Salvy

**HIS1** exponentielle

$$- 1/2 - W(- 1/2 \exp(z - 1/2))$$

1, 4, 32, 416, 7552, 176128, 5018624, 168968192, 6563282944, 288909131776, 14212910809088, 772776684683264, 46017323176296448, 2978458881388183550



### Trees of subsets of an n-set

Réf. MBIO 54 9 81.

**HIS2** A5173      Approximants de Padé

**HIS1**              Fraction rationnelle

$$z (1 + 6 z)$$

---


$$(1 - z) (1 + 2 z) (1 + 3 z)$$

0, 1, 12, 61, 240, 841, 2772, 8821, 27480, 84481, 257532, 780781, 2358720,  
7108921, 21392292, 64307941, 193185960, 580082161, 1741295052,  
5225982301, 15682141200

### Trees of subsets of an n-set

Réf. MBIO 54 9 81.

**HIS2** A5174      Approximants de Padé

**HIS1**              Fraction rationnelle

$$2 z^2 (5 + 12 z)$$

---


$$(1 - z) (1 + 2 z) (1 + 3 z) (1 - 4 z)$$

0, 0, 10, 124, 890, 5060, 25410, 118524, 527530, 2276020, 9613010,  
40001324, 164698170, 672961380, 2734531810, 11066546524,  
44652164810, 179768037140

### Trees of subsets of an n-set

Réf. MBIO 54 9 81.

**HIS2** A5175 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{z^2 (3 + 86z + 120z^2)}{(1-z)(1+2z)(1+3z)(1-4z)(1-5z)}$$

---

(1 - z) (1 + 2 z) (1 + 3 z) (1 - 4 z) (1 - 5 z)

0, 0, 3, 131, 1830, 16990, 127953, 851361, 5231460, 30459980, 170761503,  
931484191, 4979773890, 26223530970, 136522672653, 704553794621,  
3611494269120, 18415268221960

Réf. MMAG 63 15 90.

**HIS2** A5183 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{1 - 3z + 3z^2}{(z-1)(2z-1)^2}$$

---

(z - 1) (2 z - 1)<sup>2</sup>

1, 2, 5, 13, 33, 81, 193, 449, 1025, 2305, 5121, 11265, 24577, 53249, 114689,  
245761, 524289, 1114113, 2359297, 4980737, 10485761, 22020097,  
46137345, 96468993, 201326593

**$(F(2n)+F(n+1))/2$ , where  $F(n)$  is a Fibonacci number**

Réf. CJNI 25 391 82.

HIS2 A5207 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^3 - z^2 - 2z + 1}{(1 - 3z + z^2)(1 - z - z^2)}$$

1, 2, 4, 9, 21, 51, 127, 322, 826, 2135, 5545, 14445, 37701, 98514, 257608,  
673933, 1763581, 4615823, 12082291, 31628466, 82798926, 216761547,  
567474769, 1485645049

**n-bead necklaces with 4 red beads**

Réf. JAuMS 33 12 82. AJMG 22 5231 85.

HIS2 A5232 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^7 - 2z^6 + 2z^4 - 2z^3 + 2z^2 - z - 1}{(z^2 + 1)(z + 1)(1 - z)^4}$$

1, 3, 4, 8, 10, 16, 20, 29, 35, 47, 56, 72, 84, 104, 120, 145, 165, 195, 220, 256,  
286, 328, 364, 413, 455, 511, 560, 624, 680, 752, 816, 897, 969, 1059, 1140,  
1240, 1330, 1440, 1540, 1661

Réf. MAG 69 263 85.

HIS2 A5246 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z - 2z^2 - z^3}{1 - 4z + z^4}$$

1, 1, 2, 3, 7, 11, 26, 41, 97, 153, 362, 571, 1351, 2131, 5042, 7953, 18817,  
29681, 70226, 110771, 262087, 413403, 978122, 1542841, 3650401,  
5757961, 13623482, 21489003, 50843527

Réf. MAG 69 264 85.

HIS2 A5247 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 + z)(1 + z - 3z^2)}{(z^2 - z - 1)(1 - z - z^2)}$$

1, 2, 1, 3, 2, 7, 5, 18, 13, 47, 34, 123, 89, 322, 233, 843, 610, 2207, 1597,  
5778, 4181, 15127, 10946, 39603, 28657, 103682, 75025, 271443, 196418,  
710647, 514229, 1860498, 1346269

**Réf.** FQ 9 284 71. MMAG 48 209 75. MAG 69 264 85.

**HIS2** A5248      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{2 - 3z}{1 - 3z + z^2}$$

2, 3, 7, 18, 47, 123, 322, 843, 2207, 5778, 15127, 39603, 103682, 271443,  
710647, 1860498, 4870847, 12752043, 33385282, 87403803, 228826127,  
599074578, 1568397607, 4106118243

**Réf.** BR72 112. FQ 16 85 78. LAA 62 113 84.

**HIS2** A5251      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{z - 1}{z^3 - z^2 + 2z - 1}$$

1, 1, 1, 2, 4, 7, 12, 21, 37, 65, 114, 200, 351, 616, 1081, 1897, 3329, 5842,  
10252, 17991, 31572, 55405, 97229, 170625, 299426, 525456, 922111,  
1618192, 2839729, 4983377, 8745217

Réf. FQ 7 341 69; 16 85 78.

**HIS2** A5252 Approximants de Padé

**HIS1** Fraction rationnelle

$C(n-2k, 2k)$ ,  $k=0\dots n$

$$\frac{z - 1}{(1 - z + z^2)(-1 + z + z^2)}$$

1, 1, 1, 1, 2, 4, 7, 11, 17, 27, 44, 72, 117, 189, 305, 493, 798, 1292, 2091, 3383, 5473, 8855, 14328, 23184, 37513, 60697, 98209, 158905, 257114, 416020, 673135, 1089155, 1762289

### Binary words not containing ..01110...

Réf. FQ 16 85 78.

**HIS2** A5253 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{1 - z + z^4}{1 - 2z + z^2 - z^5}$$

1, 1, 1, 1, 2, 4, 7, 11, 16, 23, 34, 52, 81, 126, 194, 296, 450, 685, 1046, 1601, 2452, 3753, 5739, 8771, 13404, 20489, 31327, 47904, 73252, 112004, 171245, 261813, 400285

**Apéry numbers**

Réf. AST 61 12 79. JNT 25 201 87.

HIS2 A5258 P-réurrences Suite P-récurrente

HIS1

$$(n - 1)^2 a(n) = (n^2 - 4n + 4) a(n - 2) + (11n^2 - 33n + 25) a(n - 1)$$

1, 3, 19, 147, 1251, 11253, 104959, 1004307, 9793891, 96918753, 970336269, 9807518757, 99912156111, 1024622952993, 10567623342519, 109527728400147

**Apéry numbers**

Réf. AST 61 13 79. JNT 25 201 87.

HIS2 A5259 P-réurrences Suite P-récurrente

HIS1

$$(n - 1)^3 a(n) = (-n^3 + 6n^2 - 12n + 8) a(n - 2) + (34n^3 - 153n^2 + 231n - 117) a(n - 1)$$

1, 5, 73, 1445, 33001, 819005, 21460825, 584307365, 16367912425, 468690849005, 13657436403073, 403676083788125, 12073365010564729, 364713572395983725

Réf. JNT 25 201 87.

HIS2 A5260

P-réurrences

Suite P-récurrente

HIS1

$C(n,k)^4, k=0\dots n$

$$\begin{aligned} & (n-1)^3 a(n) = \\ & + (12n^3 - 54n^2 + 82n - 42) a(n-1) \\ & (64n^3 - 384n^2 + 764n - 504) a(n-2) \end{aligned}$$

1, 2, 18, 164, 1810, 21252, 263844, 3395016, 44916498, 607041380,  
8345319268, 116335834056, 1640651321764, 23365271704712,  
335556407724360, 4854133484555664

Réf. CRUX 13 331 87.

HIS2 A5262

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + z^2 + 4z^3}{(1+z)^2 (2z-1) (1-z)^2}$$

1, 3, 9, 25, 59, 131, 277, 573, 1167, 2359, 4745, 9521, 19075, 38187, 76413,  
152869, 305783, 611615, 1223281, 2446617, 4893291, 9786643, 19573349,  
39146765, 78293599



**Greg trees**

Réf. MANU 34 127 90.

**HIS2** A5263 équations différentielles Formule de B. Salvy

**HIS1** exponentielle

$$1/4 - 1/4 (2 + 2 W(- \exp(-1/2) (1/2 + 1/2 z)))^2$$

1, 1, 4, 32, 396, 6692, 143816, 3756104, 115553024, 4093236352,  
164098040448, 7345463787136

**From Euclid's proof**

Réf. SZ 27 31 78. LNM 829 122 80. MANU 34 127 90.

**HIS2** A5264 Inverse fonctionnel

**HIS1** exponentielle f.g. exponentielle

L'inverse est  $(1+2 z-\exp(z))/\exp(z)$

$$- W(- \exp(-1/2) (1/2 + 1/2 z)) - 1/2$$

1, 3, 22, 262, 4336, 91984, 2381408, 72800928, 2566606784, 102515201984,  
4575271116032, 225649908491264, 12187240730230208,  
715392567595384832

Réf. NET 96. MMAG 61 28 88. rkg.

HIS2 A5286 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 2z - 3z^2 + z^3}{(z - 1)^4}$$

1, 6, 15, 29, 49, 76, 111, 155, 209, 274, 351, 441, 545, 664, 799, 951, 1121, 1310, 1519, 1749, 2001, 2276, 2575, 2899, 3249, 3626, 4031, 4465, 4929, 5424, 5951, 6511, 7105, 7734

### Permutations by inversions

Réf. NET 96. DKB 241. MMAG 61 28 88. rkg.

HIS2 A5287 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{5 - 5z + z^2 - 3z^3 + z^4}{(1 - z)^5}$$

5, 20, 49, 98, 174, 285, 440, 649, 923, 1274, 1715, 2260, 2924, 3723, 4674, 5795, 7105

### Permutations by inversions

Réf. NET 96. DKB 241. MMAG 61 28 88. rkg.

HIS2 A5288 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{3 + 4z - 16z^2 + 13z^3 - z^4 - 3z^5 + z^6}{(z - 1)^6}$$

3, 22, 71, 169, 343, 628, 1068, 1717, 2640, 3914, 5629, 7889, 10813, 14536, 19210, 25005, 32110

### Graphs on n nodes with 3 cliques

Réf. AMM 80 1124 73; 82 997 75. JLMS 8 97 74. rkg.

HIS2 A5289 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 (3z^3 + z^2 + z + 1)}{(z^2 + z + 1) (1 + z)^2 (z - 1)^6}$$

0, 0, 1, 4, 12, 31, 67, 132, 239, 407, 657, 1019, 1523, 2211, 3126, 4323, 5859, 7806, 10236, 13239, 16906, 21346, 26670, 33010, 40498, 49290, 59543, 71438, 85158, 100913

### Representation degeneracies for Raymond strings

Réf. NUPH B274 544 86.

HIS2 A5303 Euler

HIS1 Produit infini

\* Le motif [4, 2] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 0, 2, 4, 3, 4, 2, 4, 2, \dots *$$

1, 0, 2, 4, 6, 12, 22, 36, 62, 104, 166, 268, 426, 660, 1022, 1564, 2358, 3540, 5266, 7756, 11362, 16524, 23854, 34252, 48890, 69368, 97942, 137588, 192314, 267628, 370798, 511524, 702886

### Representation degeneracies for Raymond strings

Réf. NUPH B274 548 86.

HIS2 A5304 Euler

HIS1 Produit infini

\* Le motif [4, 2] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, 1, 3, 3, 4, 3, 4, 2, \dots *$$

2, 2, 4, 10, 18, 32, 58, 98, 164, 274, 442, 704, 1114, 1730, 2660, 4058, 6114, 9136, 13554, 19930

### Representation degeneracies for Raymond strings

Réf. NUPH B274 548 86.

HIS2 A5305 Euler

HIS1 Produit infini

\* Le motif [4, 2] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 1, 2, 2, 4, 3, 4, 3, 4, 2, 4, 2, \dots *$$

2, 4, 8, 16, 30, 56, 100, 172, 290, 480, 780, 1248, 1970, 3068, 4724, 7200, 10862, 16240, 24080

### Representation degeneracies for Raymond strings

Réf. NUPH B274 548 86.

HIS2 A5306 Euler

HIS1 Produit infini

\* Le motif [4, 2] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 2, 3, 0, 3, 3, 4, 3, 4, 3, 4, 2, 4, 2, \dots *$$

2, 4, 10, 22, 40, 76, 138, 238, 408, 682, 1112, 1792, 2844, 4444, 6872, 10510, 15896, 23834

### Bosonic string states

Réf. CU86.  
 HIS2 A5308  
 HIS1

Euler  
 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 0, 0, 0, 1, 1, 2, 2, 3, 3, 4, 4, \dots$$

1, 0, 0, 0, 1, 1, 2, 2, 4, 4, 7, 8, 14, 16, 25, 31

### Fermionic string states

Réf. CU86.  
 HIS2 A5309  
 HIS1

Approximants de Padé conjecture  
 Fraction rationnelle

$$\frac{1 - 2z + 2z^2}{1 - 2z}$$

1, 0, 2, 4, 8, 16, 32, 60, 114, 212

### Fermionic string states

Réf. CU86.

HIS2 A5310 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2 (1 - 2z + 2z^2)}{(2z - 1)(z - 1)}$$

2, 2, 6, 14, 30, 62, 126, 246, 472

### Triangular anti-Hadamard matrices of order n

Réf. LAA 62 117 84.

HIS2 A5313 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - z - 3z^2 + z^3}{(1 + z)(1 - 3z + z^2)(z - 1)^2}$$

1, 3, 6, 13, 29, 70, 175, 449, 1164, 3035, 7931, 20748, 54301, 142143,  
372114, 974185, 2550425, 6677074, 17480779, 45765245, 119814936,  
313679543, 821223671, 2149991448

Réf. LAA 62 130 84.

HIS2 A5314 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(z - 1) (1 + z)^2}{z^3 - z^2 + 2z - 1}$$

1, 1, 2, 3, 5, 9, 16, 28, 49, 86, 151, 265, 465, 816, 1432, 2513, 4410, 7739, 13581, 23833, 41824, 73396, 128801, 226030, 396655, 696081, 1221537, 2143648, 3761840, 6601569

$$(2^n + C(2n, n))/2$$

Réf. pcf.

HIS2 A5317

LLL

Suite P-récurrente

HIS1

algébrique

$$\frac{4z + 2(-4z + 1)^{1/2}z - (-4z + 1)^{1/2} - 1}{2(1 - 4z)(1 - 2z)}$$

1, 2, 5, 14, 43, 142, 494, 1780, 6563, 24566, 92890, 353740, 1354126, 5204396, 20066492, 77575144, 300572963, 1166868646, 4537698722, 17672894044, 68923788698



### Column of Motzkin triangle

Réf. JCT A23 293 77.

**HIS2** A5322

LLL

Suite P-récurrente

**HIS1**

algébrique

$$a(n) (5 + n) = (13 + 4 n) a(n - 1) - n a(n - 2) - 6 n a(n - 3)$$

$$1 - 3 z + 2 z^3 - (- (3 z^2 + 2 z - 1) (- 1 + 2 z)^{2 1/2})$$

---


$$2 z^6$$

1, 3, 9, 25, 69, 189, 518, 1422, 3915, 10813, 29964, 83304, 232323, 649845,  
1822824, 5126520, 14453451, 40843521, 115668105, 328233969,  
933206967, 2657946907, 7583013474

### Column of Motzkin triangle

Réf. JCT A23 293 77.

**HIS2** A5323

LLL

Suite P-récurrente

**HIS1**

algébrique

$$(n + 7) (n - 1) a(n) = (n + 2) (2 n + 5) a(n - 1) + (n + 2) (3 n + 3) a(n - 2)$$

$$1 - 4 z + 2 z^2 + 4 z^3 - z^4 - (- (- 1 + 2 z + 3 z^2) (1 - 3 z + z^2 + z^3)^{2 1/2})$$

---


$$z^8$$

1, 4, 14, 44, 133, 392, 1140, 3288, 9438, 27016, 77220, 220584, 630084,  
1800384, 5147328, 14727168, 42171849, 120870324, 346757334,  
995742748, 2862099185

### Column of Motzkin triangle

Réf. JCT A23 293 77.

HIS2 A5324

LLL

Suite P-récurrente

HIS1

algébrique

$$a(n) (n + 9) (n - 1) = (n + 3) (3n + 6) a(n - 2) + (n + 3) (2n + 7) a(n - 1)$$

$$\frac{-1/2 (-1 + 5z - 5z^2 - 5z^3 + 5z^4 + z^5)}{z^{10}} + \frac{(- (z + 1) (3z - 1) (z^2 + z - 1) (z^2 - 3z + 1)^2)^{1/2}}{z^{10}}$$

1, 5, 20, 70, 230, 726, 2235, 6765, 20240, 60060, 177177, 520455, 1524120, 4453320, 12991230, 37854954, 110218905, 320751445, 933149470, 2714401580, 7895719634

### Column of Motzkin triangle

Réf. JCT A23 293 77.

HIS2 A5325

LLL

Suite P-récurrente

HIS1

algébrique

$$a(n) (n + 11) (n - 1) = (n + 4) (3n + 9) a(n - 2) + (n + 4) (2n + 9) a(n - 1)$$

$$\frac{1/2 (1 - 6z + 9z^2 + 4z^3 - 12z^4 + 2z^6)}{z^{12}} - \frac{(- (z + 1) (3z - 1) (z - 1) (2z - 1) (2z^2 + 2z - 1)^2)^{1/2}}{z^{12}}$$

1, 6, 27, 104, 369, 1242, 4037, 12804, 39897, 122694, 373581, 1128816, 3390582, 10136556, 30192102, 89662216, 265640691, 785509362, 2319218869, 6839057544

### Putting balls into 4 boxes

Réf. SIAR 12 296 70.

HIS2 A5337 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{15 - 20z + 6z^2}{(z - 1)^4}$$

15, 40, 76, 124, 185, 260, 350, 456, 579, 720, 880, 1060, 1211

### Low discrepancy sequences in base 3

Réf. JNT 30 68 88.

HIS2 A5357 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z^3 + z^{11}}{(z - 1)^2}$$

0, 0, 0, 1, 2, 3, 5, 7, 9, 11, 13, 15, 17, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58, 61, 64, 67

## Hoggatt sequence

Réf. FQ 27 167 89. FA90.

**HIS2** A5362

P-réurrences

Suite P-récurrente

**HIS1**

$$\begin{aligned}
 & (n + 5) (n + 4) (n + 3) (n + 2) a(n) = \\
 & (12 n^4 + 78 n^3 + 162 n^2 + 108 n) a(n - 1) \\
 & + (64 n^4 - 64 n^3 - 196 n^2 + 76 n + 120) a(n - 2)
 \end{aligned}$$

1, 2, 7, 32, 177, 1122, 7898, 60398, 494078, 4274228, 38763298, 366039104,  
 3579512809, 36091415154, 373853631974, 3966563630394,  
 42997859838010, 47519

Réf. FA90.

**HIS2** A5367

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{1 - z + z^3}{(1 + z)(z - 1)^3}$$

1, 1, 2, 3, 5, 7, 10, 13, 17, 21, 26, 31, 37, 43, 50, 57, 65, 73, 82, 91, 101, 111,  
 122, 133, 145, 157, 170, 183, 197, 211, 226, 241, 257, 273, 290, 307, 325,  
 343, 362, 381, 401, 421, 442, 463

**Low discrepancy sequences in base 4**

Réf. JNT 30 69 88.

HIS2 A5377 Approximants de Padé Conjecture

HIS1 Fraction rationnelle

$$\frac{z^4 (1 + z^2) (z^4 - z^2 + 1)}{(z^2 - 1)^2}$$

0, 0, 0, 0, 1, 2, 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46

Réf. SAM 273 71. DM 75 94 89.

HIS2 A5380 Euler

HIS1 Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 3, 4, 5, \dots$$

1, 2, 6, 14, 33, 70, 149, 298, 591, 1132, 2139, 3948, 7199, 12894, 22836, 39894, 68982, 117948, 199852, 335426, 558429, 922112, 1511610, 2460208, 3977963, 6390942, 10206862, 16207444, 25596941, 40214896

### Area of nth triple of squares around a triangle

Réf. PYTH 14 81 75.

HIS2 A5386 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - z}{(1 + z) (1 - 5z + z^2)}$$

1, 3, 16, 75, 361, 1728, 8281

### Partitional matroids on n elements

Réf. SMH 9 249 74.

HIS2 A5387 Dérivée logarithmique

HIS1 exponentielle

$$\exp(\exp(z) z - \exp(z) + 2z + 1)$$

1, 2, 5, 16, 62, 276, 1377, 7596, 45789, 298626, 2090910, 15621640,  
123897413, 1038535174, 9165475893, 84886111212, 822648571314,  
8321077557124, 87648445601429

### Hamiltonian circuits on $2n \times 4$ rectangle

Réf. JPA 17 445 84.

HIS2 A5389 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - 2z - z^2}{1 - 8z + 10z^2 + z^4}$$

1, 6, 37, 236, 1517, 9770, 62953, 405688, 2614457, 16849006, 108584525, 699780452, 4509783909, 29063617746, 187302518353, 1207084188912, 7779138543857, 50133202843990

### The odd numbers

Réf.

HIS2 A5408 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z}{(z - 1)^2}$$

1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101

### Polynomials of height n

Réf. CR41 103. smd.

HIS2 A5409 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - 2z + 2z^2 + z^3}{(1 - z)(1 - 2z - z^2)}$$

1, 1, 4, 11, 28, 69, 168, 407, 984

### Binary grids

Réf. TYCM 9 267 78.

HIS2 A5418 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{3z^2 - 1}{(1 - 2z)(2z^2 - 1)}$$

1, 2, 3, 6, 10, 20, 36, 72, 136, 272, 528, 1056, 2080, 4160, 8256, 16512,  
32896, 65792, 131328, 262656, 524800, 1049600, 2098176, 4196352,  
8390656, 16781312, 33558528, 67117056



### States of telephone exchange with n subscribers

Réf. JCT A21 162 1976.

**HIS2** A5425 Dérivée logarithmique Suite P-récurrente

**HIS1** exponentielle

$$a(n) = 2 a(n - 1) + (n - 2) a(n - 2)$$

$$\exp\left(2z + \frac{1}{2}z^2\right)$$

1, 2, 5, 14, 43, 142, 499, 1850, 7193, 29186, 123109, 538078, 2430355,  
11317646, 54229907, 266906858, 1347262321, 6965034370, 36833528197,  
199037675054, 1097912385851

### Apéry numbers

Réf. MI 1 195 78. JNT 20 92 85.

**HIS2** A5429 Hypergéométrique Suite P-récurrente.

**HIS1** algébrique

$$\frac{4z^2 + 10z + 1}{(1 - 4z)^{7/2}}$$

0, 2, 48, 540, 4480, 31500, 199584, 1177176, 6589440, 35443980,  
184756000, 938929992, 4672781568, 22850118200, 110079950400,  
523521630000, 2462025277440, 11465007358860

**Apéry numbers**

Réf. MI 1 195 78. JNT 20 92 85.

HIS2 A5430            Hypergéométrique            Suite P-récurrente

HIS1                    algébrique

$$\frac{2z}{(1-4z)^{3/2}}$$

0, 2, 12, 60, 280, 1260, 5544, 24024, 102960, 437580, 1847560, 7759752,  
 32449872, 135207800, 561632400, 2326762800, 9617286240, 39671305740,  
 163352435400

**Convex polygons of length 2n on square lattice**

Réf. TCS 34 179 84. JPA 21 L472 88.

HIS2 A5436            LLL            Suite P-récurrente

HIS1                    algébrique

$$(n-3) a(n) = (12n-42) a(n-1) + (-48n+192) a(n-2) + (64n-288) a(n-3)$$

$$\frac{-4z^3 - 4z^2 + (1-4z)^{1/2} + 11z^2 - 6z + 1}{(4z-1)^2}$$

1, 2, 7, 28, 120, 528, 2344, 10416, 46160, 203680, 894312, 3907056,  
 16986352, 73512288, 316786960, 1359763168, 5815457184, 24788842304,  
 105340982248, 446389242480

### From a Fibonacci-like differential equation

Réf. FQ 27 306 89.

**HIS2** A5442 Approximants de Padé f.g. exponentielle

**HIS1** Fraction rationnelle

$$\frac{1}{1 - z - z^2}$$

1, 1, 4, 18, 120, 960, 9360, 105840, 1370880, 19958400

### From a Fibonacci-like differential equation

Réf. FQ 27 306 89.

**HIS2** A5443 Dérivée logarithmique f.g. exponentielle

**HIS1** Fraction rationnelle

$$\frac{1 - z^2}{1 - z - z^2}$$

0, 1, 2, 12, 72, 600, 5760, 65520, 846720, 12337920

### Centered triangular numbers

Réf. INOC 24 4550 85.

HIS2 A5448 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 + z + 1}{(1 - z)^3}$$

1, 4, 10, 19, 31, 46, 64, 85, 109, 136, 166, 199, 235, 274, 316, 361, 409, 460, 514, 571, 631, 694, 760, 829, 901, 976, 1054, 1135, 1219, 1306, 1396, 1489, 1585, 1684, 1786, 1891, 1999

Réf. rkg.

HIS2 A5460 Dérivée logarithmique

HIS1 exponentielle

$$\frac{2z + 1}{(1 - z)^5}$$

1, 7, 50, 390, 3360, 31920, 332640, 3780000, 46569600, 618710400, 8821612800, 134399865600, 2179457280000, 37486665216000, 681734237184000, 13071512982528000

### Simplices in barycentric subdivision of n-simplex

Réf. rkg.

**HIS2** A5461      Approximants de Padé      Suite P-récurrente

**HIS1**              Fraction rationnelle

$$a(n) = (n + 13) a(n - 1) + (- 8 n - 36) a(n - 2) + (12 n + 12) a(n - 3)$$

$$\frac{6 z^2 + 8 z + 1}{(1 - z)^7}$$

1, 15, 180, 2100, 25200, 317520, 4233600, 59875200, 898128000,  
14270256000, 239740300800, 4249941696000, 79332244992000,  
1556132497920000

### Simplices in barycentric subdivision of n-simplex

Réf. rkg.

**HIS2** A5462      Dérivée logarithmique      f.g. exponentielle

**HIS1**              Fraction rationnelle

$$\frac{24 z^3 + 58 z^2 + 22 z + 1}{(1 - z)^9}$$

1, 31, 602, 10206, 166824, 2739240, 46070640, 801496080, 14495120640,  
273158645760, 5368729766400, 110055327782400, 2351983118284800

Réf. JCT A24 316 78.

HIS2 A5491 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{3z^3 + z^2 + z + 1}{(z - 1)^4}$$

1, 5, 15, 37, 77, 141, 235, 365, 537, 757, 1031, 1365, 1765, 2237, 2787, 3421, 4145, 4965, 5887, 6917, 8061, 9325, 10715, 12237, 13897, 15701, 17655, 19765, 22037

### From expansion of falling factorials

Réf. JCT A24 316 78.

HIS2 A5492 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{15 - 23z + 41z^2 - 13z^3 + 4z^4}{(1 - z)^5}$$

15, 52, 151, 372, 799, 1540, 2727, 4516, 7087, 10644, 15415, 21652, 29631, 39652, 52039, 67140, 85327, 106996, 132567, 162484, 197215, 237252, 283111

### From sum of 1/F(n)

Réf. FQ 15 46 77.

**HIS2** A5522      Approximants de Padé      Conjecture

**HIS1**              Fraction rationnelle

F(n) : Nombres de Fibonacci

$$\frac{3 - 9z + z^2 + 10z^3 - 4z^4}{(1 - z)(1 - 3z + z^2)(1 - z - z^2)}$$

3, 6, 10, 21, 46, 108, 263, 658, 1674, 4305, 11146, 28980

### Sums of successive Motzkin numbers

Réf. JCT B29 82 80.

**HIS2** A5554              LLL              Suite P-récurrente

**HIS1**                      algébrique

$(n + 1) a(n) = 2n a(n - 1) + (3n - 9) a(n - 2)$

$$\frac{1 - z^2 - (- (3z - 1) (z + 1)^{3/2})}{2z^2}$$

1, 2, 3, 6, 13, 30, 72, 178, 450, 1158, 3023, 7986, 21309, 57346, 155469,  
424206, 1164039, 3210246, 8893161, 24735666, 69051303, 193399578,  
543310782, 1530523638

### Walks on square lattice

Réf. GU90.

HIS2 A5555

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{5 - 6z + 2z^2}{(z - 1)^4}$$

5, 14, 28, 48, 75, 110, 154, 208, 273, 350, 440, 544, 663, 798, 950, 1120, 1309, 1518, 1748, 2000, 2275, 2574, 2898, 3248, 3625, 4030, 4464, 4928, 5423, 5950, 6510, 7104, 7733

### Walks on square lattice

Réf. GU90.

HIS2 A5556

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{14 - 28z + 20z^2 - 5z^3}{(1 - z)^5}$$

14, 42, 90, 165, 275, 429, 637, 910, 1260, 1700, 2244, 2907, 3705, 4655, 5775, 7084, 8602, 10350, 12350, 14625, 17199, 20097, 23345, 26970, 31000, 35464, 40392, 45815, 51765



### Walks on square lattice

Réf. GU90.

**HIS2** A5557 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{42 - 120z + 135z^2 - 70z^3 + 14z^4}{(z - 1)^6}$$

42, 132, 297, 572, 1001, 1638, 2548, 3808, 5508, 7752, 10659, 14364, 19019, 24794, 31878, 40480, 50830, 63180, 77805, 95004, 115101, 138446, 165416, 196416, 231880

### Walks on square lattice

Réf. GU90.

**HIS2** A5558 P-réurrences Suite P-récurrente

**HIS1**

$$(n + 2)(n + 1)a(n) = (-64n^2 + 320n - 384)a(n - 3) + (16n^2 - 48n + 16)a(n - 2) + (4n^2 + 4n - 4)a(n - 1)$$

1, 1, 3, 6, 20, 50, 175, 490, 1764, 5292, 19404, 60984, 226512, 736164, 2760615, 9202050, 34763300, 118195220, 449141836, 1551580888, 5924217936, 20734762776

### Walks on square lattice

Réf. GU90.

HIS2 A5559

P-réurrences

Suite P-récurrente

HIS1

$$\begin{aligned}
 & (n - 1) (n + 4) (n + 3) a(n) = \\
 & \left( \frac{64}{5} n^3 - \frac{192}{5} n^2 + \frac{128}{5} n \right) a(n - 3) \\
 & + \left( 16 n^3 + \frac{96}{5} n^2 - \frac{128}{5} n \right) a(n - 2) \\
 & + \left( -\frac{4}{5} n^3 + \frac{12}{5} n^2 + \frac{76}{5} n + \frac{132}{5} \right) a(n - 1)
 \end{aligned}$$

1, 2, 8, 20, 75, 210, 784, 2352, 8820, 27720, 104544, 339768, 1288287,  
 4294290, 16359200, 55621280, 212751396, 734959368, 2821056160,  
 9873696560, 38013731756

### Walks on square lattice

Réf. GU90.

HIS2 A5563

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{z - 3}{(z - 1)^3}$$

3, 8, 15, 24, 35, 48, 63, 80, 99, 120, 143, 168, 195, 224, 255, 288, 323, 360,  
 399, 440, 483, 528, 575, 624, 675, 728, 783, 840, 899, 960, 1023, 1088

### Walks on square lattice

Réf. GU90.

HIS2 A5564

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{6 - 4z + z^2}{(z - 1)^4}$$

6, 20, 45, 84, 140, 216, 315, 440, 594, 780, 1001, 1260, 1560, 1904, 2295, 2736, 3230, 3780, 4389, 5060, 5796, 6600, 7475, 8424, 9450, 10556

### Walks on square lattice

Réf. GU90.

HIS2 A5565

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{20 - 25z + 14z^2 - 3z^3}{(1 - z)^5}$$

20, 75, 189, 392, 720, 1215, 1925, 2904, 4212, 5915, 8085, 10800, 14144, 18207, 23085, 28880, 35700, 43659, 52877, 63480, 75600, 89375, 104949, 122472, 142100

### Walks on square lattice

Réf. GU90.

**HIS2** A5566

P-réurrences

Suite P-récurrente

**HIS1**

$$(n + 1) n a(n) = (16 n^2 - 48 n + 32) a(n - 2) + (8 n - 4) a(n - 1)$$

1, 2, 6, 18, 60, 200, 700, 2450, 8820, 31752, 116424, 426888, 1585584, 5889312, 22084920, 82818450, 312869700, 1181952200, 4491418360, 17067389768

### Walks on square lattice

Réf. GU90.

**HIS2** A5567

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{2 (5 - 10 z + 4 z^2)}{(2 z - 1)^3 (z - 1)^3}$$

10, 70, 308, 1092, 3414, 9834, 26752, 69784, 176306, 434382, 1048812, 2490636, 5833006, 13500754, 30933368, 70255008, 158335434, 354419190, 788529700

### Product of successive Catalan numbers

Réf. JCT A43 1 86.

HIS2 A5568 Hypergéométrique

HIS1 Intégrales elliptiques

$$\frac{(2F_1([1/2, -1/2], [2], 16z) + 1/2z)}{2z}$$

$$2z$$

1, 2, 10, 70, 588, 5544, 56628, 613470, 6952660, 81662152, 987369656,  
12228193432, 154532114800, 1986841476000, 25928281261800,  
342787130211150, 4583937702039300

### Walks on square lattice

Réf. GU90.

HIS2 A5569 Hypergéométrique Suite P-récurrente

HIS1

$1/5 (n - 1) (5n + 2) (n + 3) (n + 2) a(n) = 4/5 (5n + 7) (2n + 1) (2n - 1) n a(n - 1)$

$$4 (4F_3([2, 17/5, 5/2, 3/2], [4, 5, 12/5], 16z))$$

4, 34, 308, 3024, 31680, 349206, 4008004, 47530912, 579058896,  
7215393640, 91644262864, 1183274479040, 15497363512800,  
205519758825150

**Walks on cubic lattice**

Réf. GU90.

**HIS2** A5570

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{z - 17}{(z - 1)^3}$$

17, 50, 99, 164, 245, 342, 455, 584, 729, 890, 1067, 1260, 1469, 1694, 1935, 2192, 2465, 2754, 3059, 3380, 3717, 4070, 4439, 4824, 5225, 5642, 6075, 6524, 6989, 7470

**Walks on cubic lattice**

Réf. GU90.

**HIS2** A5571

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{4(19 - 4z + z^2)}{(z - 1)^4}$$

76, 288, 700, 1376, 2380, 3776, 5628, 8000, 10956, 14560, 18876, 23968, 29900, 36736, 44540, 53376, 63308, 74400, 86716

**Walks on cubic lattice**

Réf. GU90.

**HIS2** A5572      inverse fonctionnel      Suite P-récurrente**HIS1**                      algébrique

$$(n + 1) a(n) = (-12n + 24) a(n - 2) + (8n - 4) a(n - 1)$$

$$1 - 4z - (1 - 8z + 12z^2)^{1/2}$$


---

$$2z$$

1, 4, 17, 76, 354, 1704, 8421, 42508, 218318, 1137400, 5996938, 31940792,  
171605956, 928931280, 5061593709

**Walks on cubic lattice**

Réf. GU90.

**HIS2** A5573      inverse fonctionnel      Suite P-récurrente**HIS1**                      algébrique

$$n a(n) = (-12n + 24) a(n - 2) + (8n - 6) a(n - 1)$$

$$1 - 6z - (1 - 8z + 12z^2)^{1/2}$$


---

$$2z$$

1, 5, 26, 139, 758, 4194, 23460, 132339, 751526, 4290838, 24607628,  
141648830, 817952188, 4736107172, 27487711752, 159864676803

Réf. GTA91 603.

HIS2 A5578 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - z - z^2}{(z - 1)(2z - 1)(1 + z)}$$

1, 1, 2, 3, 6, 11, 22, 43, 86, 171, 342, 683, 1366, 2731, 5462, 10923, 21846,  
43691, 87382, 174763, 349526, 699051, 1398102, 2796203, 5592406,  
11184811, 22369622

Réf. AS1 797.

HIS2 A5581 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2 - z}{(z - 1)^4}$$

2, 7, 16, 30, 50, 77, 112, 156, 210, 275, 352, 442, 546, 665, 800, 952, 1122,  
1311, 1520, 1750, 2002, 2277, 2576, 2900, 3250, 3627, 4032, 4466, 4930,  
5425, 5952, 6512, 7106, 7735, 8400



Réf. AS1 797.

HIS2 A5582 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2 - z}{(z - 1)^5}$$

2, 9, 25, 55, 105, 182, 294, 450, 660, 935, 1287, 1729, 2275, 2940, 3740,  
4692, 5814, 7125, 8645, 10395, 12397, 14674, 17250, 20150, 23400, 27027,  
31059, 35525, 40455, 45880, 51832

### Coefficients of Chebyshev polynomials

Réf. AS1 797.

HIS2 A5583 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2 - z}{(z - 1)^6}$$

2, 11, 36, 91, 196, 378, 672, 1122, 1782, 2717, 4004, 5733, 8008, 10948,  
14688, 19380, 25194, 32319, 40964, 51359, 63756, 78430, 95680, 115830,  
139230, 166257, 197316, 232841

## Coefficients of Chebyshev polynomials

Réf. AS1 797.

HIS2 A5584

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{2 - z}{(z - 1)^7}$$

2, 13, 49, 140, 336, 714, 1386, 2508, 4290, 7007, 11011, 16744, 24752, 35700, 50388, 69768, 94962, 127281, 168245, 219604, 283360, 361790, 457470, 573300, 712530, 878787

## 5-dimensional pyramidal numbers

Réf. AS1 797.

HIS2 A5585

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + z}{(z - 1)^6}$$

1, 7, 27, 77, 182, 378, 714, 1254, 2079, 3289, 5005, 7371, 10556, 14756, 20196, 27132, 35853, 46683, 59983, 76153, 95634, 118910, 146510, 179010, 217035, 261261, 312417, 371287

Réf. AS1 796.

HIS2 A5586 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z (5 - 6z + 2z^2)}{(z - 1)^4}$$

0, 5, 14, 28, 48, 75, 110, 154, 208, 273, 350, 440, 544, 663, 798, 950, 1120, 1309, 1518, 1748, 2000, 2275, 2574, 2898, 3248, 3625, 4030, 4464, 4928, 5423, 5950, 6510, 7104, 7733, 8398

Réf. AS1 796.

HIS2 A5587 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z (-14 + 28z - 20z^2 + 5z^3)}{(z - 1)^5}$$

0, 14, 42, 90, 165, 275, 429, 637, 910, 1260, 1700, 2244, 2907, 3705, 4655, 5775, 7084, 8602, 10350, 12350, 14625, 17199, 20097, 23345, 26970, 31000, 35464, 40392, 45815, 51765

Réf. CJNI 25 391 82.

HIS2 A5592 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2 - 2z + z^2}{(1 - z)(1 - 3z + z^2)}$$

2, 6, 17, 46, 122, 321, 842, 2206, 5777, 15126, 39602, 103681, 271442,  
710646, 1860497, 4870846, 12752042, 33385281, 87403802, 228826126,  
599074577, 1568397606, 4106118242

Réf. CJNI 25 391 82.

HIS2 A5593 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2 - 5z + z^2 + 2z^3 - z^4}{(1 - z)(1 - z - z^2)(1 - 3z + z^2)}$$

2, 5, 12, 29, 71, 177, 448, 1147, 2960, 7679, 19989, 52145, 136214, 356121,  
931540, 2437513, 6379403, 16698113, 43710756, 114427391, 299560472,  
784236315, 2053119817, 5375076769

### Functions realized by cascades of n gates

Réf. BU77.

HIS2 A5609 Approximants de Padé

HIS1 Fraction rationnelle

$$16 (7z - 4)$$

---


$$(28z - 1)(1 - z)$$

64, 1744, 48784, 1365904, 38245264, 1070867344, 29984285584,  
839559996304

### Functions realized by cascades of n gates

Réf. BU77.

HIS2 A5610 Approximants de Padé

HIS1 Fraction rationnelle

$$2 (7 - 6z)$$

---


$$(1 - 6z)(1 - z)$$

14, 86, 518, 3110, 18662, 111974, 671846, 4031078

### Disjunctively-realizable functions of n variables

Réf. PGEC 24 687 75.

HIS2 A5616 Inverse fonctionnel f.g. exponentielle

HIS1 exponentielle

L'inverse de  $S(z)$  est

$$\ln(z + 1) - z + \ln(z + 2) - \ln(2)$$

2, 10, 114, 2154, 56946, 1935210, 80371122, 3944568042, 223374129138,  
14335569726570, 1028242536825906, 81514988432370666,  
7077578056972377714

Réf. PGEC 11 140 62.

HIS2 A5618 Approximants de Padé

HIS1 Fraction rationnelle

$$3z - 1$$

-----

$$(1 - 6z)(z - 1)$$

4, 16, 88, 520, 3112, 18664, 111976, 671848, 4031080, 24186472,  
145118824, 870712936, 5224277608, 31345665640, 188073993832,  
1128443962984, 6770663777896

### Functions realized by n-input cascades

Réf. PGEC 27 790 78.

HIS2 A5619 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{16 (1 - 18 z + 20 z^2)}{(z - 1) (80 z^2 - 32 z + 1)}$$

16, 240, 6448, 187184, 5474096, 160196400, 4688357168, 137211717424, 4015706384176

Réf. JACM 23 705 76. PGEC 27 315 78. LNM 829 122 80.

HIS2 A5640 Inverse fonctionnel

HIS1 exponentielle

$$- 2 W(- 1/2 \exp(z - 1/2))$$

1, 2, 8, 64, 832, 15104, 352256, 10037248, 337936384, 13126565888

### From sum of inverse binomial coefficients

Réf. C1 294.

HIS2 A5649

Recouplements

HIS1

exponentielle

$$\frac{1}{(\exp(z) - 2)^2}$$

1, 2, 8, 44, 308, 2612, 25988, 296564, 3816548, 54667412, 862440068,  
14857100084, 277474957988, 5584100659412, 120462266974148,  
2772968936479604, 67843210855558628

### Tower of Hanoi with cyclic moves only

Réf. IPL 13 118 81. GKP 18.

HIS2 A5665

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{z (1 + 2 z)}{(z - 1) (2 z^2 + 2 z - 1)}$$

0, 1, 5, 15, 43, 119, 327, 895, 2447, 6687, 18271, 49919, 136383, 372607,  
1017983, 2781183, 7598335, 20759039, 56714751, 154947583, 423324671,  
1156544511, 3159738367



**Tower of Hanoi with cyclic moves only**

Réf. IPL 13 118 81. GKP 18.

HIS2 A5666 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z (2 + z)}{(z - 1) (2 z^2 + 2 z - 1)}$$

0, 2, 7, 21, 59, 163, 447, 1223, 3343, 9135, 24959, 68191, 186303, 508991,  
 1390591, 3799167, 10379519, 28357375, 77473791, 211662335, 578272255,  
 1579869183, 4316282879

Réf. rkg.

HIS2 A5667 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - 3 z}{1 - 6 z - z^2}$$

1, 3, 19, 117, 721, 4443, 27379, 168717, 1039681, 6406803, 39480499,  
 243289797, 1499219281, 9238605483, 56930852179, 350823718557,  
 2161873163521, 13322062699683

### Convergents to square root of 10

Réf. rkg.

**HIS2** A5668

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{z}{1 - 6z - z^2}$$

0, 1, 6, 37, 228, 1405, 8658, 53353, 328776, 2026009, 12484830, 76934989, 474094764, 2921503573

### F(n) - 2 ^ [n/2]

Réf. rkg.

**HIS2** A5672

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{z^3}{(1 - z - z^2)^2 (1 - 2z)^2}$$

0, 0, 0, 1, 1, 4, 5, 13, 18, 39, 57, 112, 169, 313, 482, 859, 1341, 2328, 3669, 6253, 9922, 16687, 26609, 44320, 70929, 117297, 188226, 309619, 497845, 815656, 1313501, 2145541

Réf. rkg.

**HIS2** A5673

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{z^4}{(1-z)(2z^2-1)(z^2+z-1)}$$

0, 0, 0, 0, 1, 2, 6, 11, 24, 42, 81, 138, 250, 419, 732, 1214, 2073, 3414, 5742,  
 9411, 15664, 25586, 42273, 68882, 113202, 184131, 301428, 489654,  
 799273, 1297118, 2112774

Réf. rkg.

**HIS2** A5674

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{z^4}{(1-2z)(2z^2-1)(z^2+z-1)}$$

0, 0, 0, 0, 1, 3, 10, 25, 63, 144, 327, 711, 1534, 3237, 6787, 14056, 28971,  
 59283, 120894, 245457, 497167, 1004256, 2025199, 4077007, 8198334,  
 16467597, 33052491, 66293208

**C(n-k,4k), k=0...n**

Réf.

**HIS2** A5676

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{(1 - z)^3}{1 - 4z + 6z^2 - 4z^3 + z^4 - z^5}$$

1, 1, 1, 1, 1, 2, 6, 16, 36, 71, 128, 220, 376, 661, 1211, 2290, 4382, 8347,  
 15706, 29191, 53824, 99009, 182497, 337745, 627401, 1167937, 2174834,  
 4046070, 7517368, 13951852, 25880583

**Twopins positions**

Réf. GU81.

**HIS2** A5682

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{1}{(z^3 - z^2 + 2z - 1)(-1 + z^2 + z^3)}$$

1, 2, 4, 8, 15, 28, 51, 92, 165, 294, 522, 924, 1632, 2878, 5069, 8920, 15686,  
 27570, 48439, 85080, 149405, 262320, 460515, 808380, 1418916, 2490432

### Numbers of Twopins positions

Réf. GU81.

HIS2 A5683

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 - z^2 - z^3 - z^4 - z^5}{(z^3 - z^2 + 2z - 1)(1 - z^2 - z^3)}$$

1, 2, 3, 5, 8, 13, 22, 37, 63, 108, 186, 322, 559, 973, 1697, 2964, 5183, 9071, 15886, 27835, 48790, 85545, 150021, 263136, 461596, 809812, 1420813, 2492945

### Twopins positions

Réf. GU81.

HIS2 A5684

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1}{(1 - z + z^2)(1 - z - z^2)(1 - z^2 - z^4)}$$

1, 2, 4, 6, 11, 18, 32, 52, 88, 142, 236, 382, 629, 1018, 1664, 2692, 4383, 7092, 11520, 18640, 30232, 48916, 79264, 128252, 207705, 336074, 544084

### Twopins positions

Réf. GU81.

HIS2 A5685

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 - z^2 + z^3 - 2z^4 - z^5 - z^6 - z^7}{(1 - z + z^2)(1 - z - z^3)(1 - z^2 - z^4)}$$

1, 2, 3, 5, 7, 11, 16, 26, 40, 65, 101, 163, 257, 416, 663, 1073, 1719, 2781, 4472, 7236, 11664, 18873, 30465, 49293, 79641, 128862, 208315, 337061, 545071

### Twopins positions

Réf. GU81.

HIS2 A5686

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{(1 + z)^3 (z^2 + z + 1)}{1 + z^2 + z^5}$$

1, 2, 2, 3, 3, 4, 5, 6, 8, 9, 12, 14, 18, 22, 27, 34, 41, 52, 63, 79, 97, 120, 149, 183, 228, 280, 348, 429, 531, 657, 811

**Twopins positions**

Réf. GU81.

**HIS2** A5687 Approximants de Padé**HIS1** Fraction rationnelle

$$\frac{1}{(1 - 2z + z^2 - z^5)(1 - z^2 - z^5)}$$

1, 2, 4, 6, 9, 14, 22, 36, 57, 90, 139, 214, 329, 506, 780, 1200, 1845, 2830, 4337, 6642, 10170, 15572, 23838, 36486, 55828, 85408, 130641, 199814, 305599

**Twopins positions**

Réf. FQ 16 85 78. GU81.

**HIS2** A5689 Approximants de Padé**HIS1** Fraction rationnelle

$$\frac{1 + z^2 + z^3 + z^4 + z^5}{(1 - z^3 - z^3)(z^3 - z + 1)}$$

1, 2, 4, 7, 11, 16, 22, 30, 42, 61, 91, 137, 205, 303, 443, 644, 936, 1365, 1999, 2936, 4316, 6340, 9300, 13625, 19949, 29209, 42785, 62701, 91917, 134758, 197548, 289547

### Twopins positions

Réf. GU81.

**HIS2** A5690 Approximants de Padé

**HIS1** Fraction rationnelle

$$1$$

$$\frac{1}{(1 - z - z^3) (1 - z + z^3) (1 - z^2 - z^6)}$$

1, 2, 4, 6, 9, 12, 18, 26, 41, 62, 96, 142, 212, 308, 454, 662, 979, 1438, 2128, 3126, 4606, 6748, 9910, 14510, 21298, 31212, 45820, 67176, 98571, 144476

### Dyck paths

Réf. LNM 1234 118 86.

**HIS2** A5700 hypergéométrique Suite P-récurrente

**HIS1** Intégrales elliptiques

$${}_3F_2([1, 1/2, 3/2], [3, 4], 16z)$$

1, 1, 3, 14, 84, 594, 4719, 40898, 379236, 3711916, 37975756, 403127256



Réf. R1 150. rkg.

HIS2 A5704

Euler

HIS1

Produit infini

$$\frac{1}{(1-z)^2 (1-z^3) (1-z^9) (1-z^{27}) \dots}$$

1, 1, 2, 4, 8, 19, 44, 112, 287, 763

Réf. AMM 95 555 88.

HIS2 A5708

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1}{1 - z - z^6}$$

1, 1, 1, 1, 1, 1, 2, 3, 4, 5, 6, 7, 9, 12, 16, 21, 27, 34, 43, 55, 71, 92, 119, 153, 196, 251, 322, 414, 533, 686, 882, 1133, 1455, 1869, 2402, 3088, 3970, 5103

**Réf.** AMM 95 555 88.

**HIS2** A5709      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{1}{1 - z - z^7}$$

1, 1, 1, 1, 1, 1, 1, 2, 3, 4, 5, 6, 7, 8, 10, 13, 17, 22, 28, 35, 43, 53, 66, 83, 105, 133, 168, 213, 266, 332, 415, 520, 653, 821, 1034, 1300, 1632, 2047, 2567, 3220, 4041

**Réf.** AMM 95 555 88.

**HIS2** A5710      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{1}{1 - z - z^8}$$

1, 1, 1, 1, 1, 1, 1, 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 14, 18, 23, 29, 36, 44, 53, 64, 78, 96, 119, 148, 184, 228, 281, 345, 423, 519, 638, 786, 970, 1198, 1479, 1824, 2247, 2766, 3404

Réf. AMM 95 555 88.

HIS2 A5711 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z^8}{1 - z - z^9}$$

1, 1, 1, 1, 1, 1, 1, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 19, 24, 30, 37, 45, 54, 64, 76, 91, 110, 134, 164, 201, 246, 300, 364, 440, 531, 641, 775, 939, 1140, 1386, 1686, 2050, 2490, 3021

### From expansion of $(1 + x + x^2)^n$

Réf. C178.

HIS2 A5712 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 - z - 1}{(z - 1)^5}$$

1, 6, 19, 45, 90, 161, 266, 414, 615, 880, 1221, 1651, 2184, 2835, 3620, 4556, 5661, 6954, 8455, 10185, 12166, 14421, 16974, 19850, 23075, 26676, 30681, 35119, 40020, 45415

**From expansion of  $(1 + x + x^2)^n$**

Réf. C178.

HIS2 A5714

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + 3z - 4z^2 + z^3}{(1 - z)^7}$$

1, 10, 45, 141, 357, 784, 1554, 2850, 4917, 8074, 12727, 19383, 28665,  
41328, 58276, 80580, 109497, 146490, 193249, 251713, 324093, 412896,  
520950, 651430, 807885

**From expansion of  $(1 + x + x^2)^n$**

Réf. C178.

HIS2 A5715

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{(2 - z)(z^2 - 2)}{(1 - z)^8}$$

4, 30, 126, 393, 1016, 2304, 4740, 9042, 16236, 27742, 45474, 71955,  
110448, 165104, 241128, 344964, 484500, 669294, 910822, 1222749,  
1621224, 2125200, 2756780

### From expansion of $(1 + x + x^2)^n$

Réf. C178.

HIS2 A5716

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + 6z - 9z^2 + 3z^3}{(1 - z)^9}$$

1, 15, 90, 357, 1107, 2907, 6765, 14355, 28314, 52624, 93093, 157950,  
258570, 410346, 633726, 955434, 1409895, 2040885, 2903428, 4065963,  
5612805, 7646925

### From expansion of $(1 + x + x^2)^n$

Réf. C178.

HIS2 A5717

LLL

Suite P-récurrente

HIS1

algébrique

$(n + 1) a(n) = 3n a(n - 1) + (-3n + 6) a(n - 3) + (n + 3) a(n - 2)$

$$\frac{z + (z + 1)^{1/2} (1 - 3z)^{1/2} - 1}{2 (z + 1)^{1/2} (1 - 3z)^{1/2}}$$

1, 2, 6, 16, 45, 126, 357, 1016, 2907, 8350, 24068, 69576, 201643, 585690,  
1704510, 4969152, 14508939, 42422022, 124191258, 363985680,  
1067892399, 3136046298, 9217554129

**Quadrinomial coefficients**

Réf. C178.

HIS2 A5718

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{z^2 - 3z + 3}{(1 - z)^5}$$

3, 12, 31, 65, 120, 203, 322, 486, 705, 990, 1353, 1807, 2366, 3045, 3860,  
 4828, 5967, 7296, 8835, 10605, 12628, 14927, 17526, 20450, 23725, 27378,  
 31437, 35931, 40890, 46345

**Quadrinomial coefficients**

Réf. C178.

HIS2 A5719

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{z^2 - 2z^2 + z^3}{(z - 1)^6}$$

2, 12, 40, 101, 216, 413, 728, 1206, 1902, 2882, 4224, 6019, 8372, 11403,  
 15248, 20060, 26010, 33288, 42104, 52689, 65296, 80201, 97704, 118130,  
 141830, 169182, 200592

### Quadrinomial coefficients

Réf. C178.

HIS2 A5720

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + 3z - 5z^2 + 2z^3}{(1 - z)^7}$$

1, 10, 44, 135, 336, 728, 1428, 2598, 4455, 7282, 11440, 17381, 25662, 36960, 52088, 72012, 97869, 130986, 172900, 225379, 290444, 370392, 467820, 585650, 727155, 895986

### Quadrinomial coefficients

Réf. C178.

HIS2 A5725

P-réurrences

Suite P-récurrente

HIS1

algébrique

La méthode LLL permet de trouver l'expression algébrique du 3è degré.

$$\begin{aligned} \frac{1}{2} (n - 1) (2n - 3) a(n) &= (-\frac{21}{4} n^2 + \frac{143}{4} n - 50) a(n - 1) \\ &+ (24 n^2 - 139 n + 200) a(n - 2) + (20 n^2 - 120 n + 180) a(n - 3) \\ &+ (32 n^2 - 224 n + 384) a(n - 4) \end{aligned}$$

1, 1, 3, 10, 31, 101, 336, 1128, 3823, 13051, 44803, 154518, 534964, 1858156, 6472168, 22597760, 79067375, 277164295, 973184313, 3422117190, 12049586631, 42478745781

Réf. LI68 20. MMAG 49 181 76.

HIS2 A5732 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^3 - z - 1}{(z - 1)^7}$$

1, 8, 35, 111, 287, 644, 1302, 2430, 4257, 7084, 11297, 17381, 25935, 37688, 53516, 74460, 101745, 136800, 181279, 237083, 306383, 391644, 495650, 621530, 772785, 953316

### Coefficients of a modular function

Réf. GMJ 8 29 67.

HIS2 A5758 Euler

HIS1 Produit infini

\* Le motif [12] est constant

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 12, 12, 12, 12, \dots *$$

1, 12, 90, 520, 2535, 10908, 42614, 153960



### Convex polygons of length $2n$ on square lattice

Réf. TCS 34 179 84.

HIS2 A5770 Approximants de Padé

HIS1 Fraction rationnelle

$$1 - 3z + 2z^2 + z^3$$

---


$$(4z - 1)(2z - 1)(1 - 3z + z^2)$$

1, 9, 55, 286, 1362, 6143, 26729, 113471, 473471, 1951612, 7974660,  
32384127, 130926391, 527657073, 2121795391, 8518575466, 34162154550,  
136893468863, 548253828965

### Directed animals of size $n$

Réf. AAM 9 340 88.

HIS2 A5773 Inverse fonctionnel Suite P-récurrente

HIS1 algébrique Inverse des nombres de Motzkin

$$-1 + 3z + (1 - 2z - 3z^2)^{1/2}$$

---


$$2(1 - 3z)$$

1, 2, 5, 13, 35, 96, 267, 750, 2123, 6046, 17303, 49721, 143365, 414584,  
1201917, 741365049, 2173243128, 6377181825, 18730782252, 3492117,  
10165779, 29643870, 86574831, 253188111

### Directed animals of size n

Réf. AAM 9 340 88.

**HIS2** A5774 P-réurrences et LLL Suite P-récurrente

**HIS1** algébrique

$$a(n) (2 + n) = (4 + 4n) a(n-1) - n a(n-2) \\ (12 - 6n) a(n-3)$$

$$\frac{1 - 3z - (- (3z^2 + 2z - 1) (-1 + 2z)^{2 1/2})}{2 (3z^4 - z^3)}$$

1, 3, 9, 26, 75, 216, 623, 1800, 5211, 15115, 43923

### 4-dimensional Catalan numbers

Réf. TS89. CN 75 124 90.

**HIS2** A5790 Hypergéométrique Suite P-récurrente

**HIS1**

$${}_4F_3 ([1, 5/4, 7/4, 3/2], [3, 4, 5], 256z)$$

1, 14, 462, 24024, 1662804, 140229804, 13672405890, 1489877926680, 177295473274920

### Permutations with subsequences of length $\leq 3$

Réf. JCT A53 281 90.

HIS2 A5802 P-réurrences Suite P-récurrente

HIS1

$$\begin{aligned} (n + 1)^2 a(n) = \\ (10n^2 - 18n + 5) a(n - 1) \\ + (-9n^2 + 36n - 36) a(n - 2) \end{aligned}$$

1, 1, 2, 6, 23, 103, 513, 2761, 15767, 94359, 586590, 3763290, 24792705,  
167078577, 1148208090, 8026793118, 56963722223, 409687815151,  
2981863943718, 21937062144834

### Second-order Eulerian numbers

Réf. JCT A24 28 78. GKP 256.

HIS2 A5803 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2}{(1 - 2z)(z - 1)^2}$$

0, 2, 8, 22, 52, 114, 240, 494, 1004, 2026, 4072, 8166, 16356, 32738, 65504,  
131038, 262108, 524250, 1048536, 2097110, 4194260, 8388562, 16777168,  
33554382, 67108812, 134217674

### Sums of adjacent Catalan numbers

Réf. dek.

**HIS2** A5807

Hypergéométrique

améliorée par

**HIS1**

algébrique

la méthode LLL

$$\frac{1 - z - (- (4z - 1) (z + 1)^{2/2})}{2z^2}$$

2, 3, 7, 19, 56, 174, 561, 1859, 6292, 21658, 75582, 266798, 950912,  
3417340, 12369285, 45052515, 165002460, 607283490, 2244901890,  
8331383610, 31030387440

### Binomial coefficients

Réf. AS1 828.

**HIS2** A5809

hypergéométrique-LLL

suite P-récurrente

**HIS1**

algébrique

$${}_2F_1\left(\left[\frac{1}{3}, \frac{2}{3}\right], \left[\frac{1}{2}\right], 27 \frac{z}{4}\right)$$

1, 3, 15, 84, 495, 3003, 18564, 116280, 735471, 4686825, 30045015,  
193536720, 1251677700, 8122425444, 52860229080, 344867425584,  
2254848913647, 14771069086725

**Binomial coefficients (4n,n)**

Réf. AS1 828. dek.

**HIS2** A5810 hypergéométrique-LLL suite P-récurrente**HIS1** algébrique

$${}_3F_2\left(\left[\frac{1}{2}, \frac{3}{4}, \frac{1}{4}\right], \left[\frac{2}{3}, \frac{1}{3}\right], 256 \frac{z}{27}\right)$$

1, 4, 28, 220, 1820, 15504, 134596, 1184040, 10518300, 94143280,  
 847660528, 7669339132, 69668534468, 635013559600, 5804731963800,  
 53194089192720, 488526937079580

Réf. JCT A43 1 1986.

**HIS2** A5817 P-réurrences Suite P-récurrente**HIS1**

$$(n + 4) (n + 3) a(n) =$$

$$(8n + 12) a(n - 1) + (16n^2 - 16n) a(n - 2)$$

1, 2, 4, 10, 25, 70, 196, 588, 1764, 5544, 17424, 56628, 184041, 613470,  
 2044900, 6952660, 23639044, 81662152, 282105616, 987369656,  
 3455793796, 12228193432, 43268992144

### Spanning trees in third power of cycle

Réf. FQ 23 258 85.

HIS2 A5822 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 - z) (1 + z) (z^4 + z^3 - z^2 + z + 1)}{z^8 - 4z^6 - z^4 - 4z^2 + 1}$$

1, 1, 2, 4, 11, 16, 49, 72, 214, 319, 947, 1408, 4187, 6223, 18502, 27504, 81769, 121552, 361379, 537196

Réf. JSC 10 599 90.

HIS2 A5824 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z (1 + 2z) (1 - z)}{1 - 5z^2 + 2z^4}$$

0, 1, 1, 3, 5, 13, 23, 59, 105, 269, 479, 1227, 2185, 5597, 9967, 25531, 45465, 116461, 207391, 531243, 946025, 2423293, 4315343, 11053979, 19684665, 50423309, 89792639

**Worst case of a Jacobi symbol algorithm**

Réf. JSC 10 605 90.

HIS2 A5825      Approximants de Padé

HIS1              Fraction rationnelle

$$\frac{z (1 + 2z - 4z^2)}{(1 - 2z^2) (1 - 5z + 2z^2)}$$

0, 1, 7, 31, 145, 659, 3013, 13739, 62685, 285931

**Worst case of a Jacobi symbol algorithm**

Réf. JSC 10 605 90.

HIS2 A5826      Approximants de Padé

HIS1              Fraction rationnelle

$$\frac{1 + 6z^2 - 4z^3}{(1 - 2z^2) (1 - 5z + 2z^2)}$$

1, 5, 31, 141, 659, 3005, 13739, 62669, 285931, 1304285

### Worst case of a Jacobi symbol algorithm

Réf. JSC 10 605 90.

HIS2 A5827 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - 2z - 2z^2 + 2z^3}{(1 - 2z^2)(1 - 5z + 2z^2)}$$

1, 3, 13, 57, 259, 1177, 5367, 24473, 111631, 509193

Réf. ST89.

HIS2 A5840 Recouvrements

HIS1 exponentielle

$$\frac{\exp(z)(1 - z)}{2 - \exp(z)}$$

1, 1, 2, 8, 46, 332, 2874, 29024, 334982, 4349492, 62749906, 995818760,  
17239953438, 323335939292, 6530652186218, 141326092842416,  
3262247252671414, 80009274870905732



## Packing a square with squares of sides 1...n

Réf. GA77 147. UPG D5.

**HIS2** A5842

Euler

Conjecture

**HIS1**

Produit infini

$$\frac{(1 - z^2) (1 - z^9) (1 - z^{11}) (1 - z^{13}) (1 - z^{15}) \dots}{(1 - z^3) (1 - z^8) (1 - z^{10}) (1 - z^{12}) (1 - z^{14}) (1 - z^{16}) \dots}$$

1, 3, 5, 7, 9, 11, 13, 15, 18, 21, 24, 27, 30, 33, 36, 39, 43

## The even numbers

Réf.

**HIS2** A5843

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{2}{(z - 1)^2}$$

2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 104

### Theta series of b.c.c. lattice w.r.t. short edge

Réf. JCP 83 6526 85.

**HIS2** A5869 Euler

**HIS1** Produit infini

\* Le motif [3, -3] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 3, -3, \dots *$$

2, 6, 6, 8, 12, 6, 12, 18, 6, 14, 18, 12, 18, 18, 12, 12, 30, 18, 14, 24, 6, 30, 30,  
12, 24, 24, 18, 24, 30, 12, 26, 42, 24, 12, 30, 18, 24, 48, 18, 36, 24, 18, 36, 30,  
24, 26, 48, 18, 30, 48, 12, 36, 54

### Theta series of cubic lattice

Réf. SPLAG 107.

**HIS2** A5875 Euler

**HIS1** Produit infini

\* Le motif [6, -9, 6, -3] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 6, -9, 6, -3, \dots *$$

1, 6, 12, 8, 6, 24, 24, 0, 12, 30, 24, 24, 8, 24, 48, 0, 6, 48, 36, 24, 24, 48, 24, 0,  
24, 30, 72, 32, 0, 72, 48, 0, 12, 48, 48, 48, 30, 24, 72, 0, 24, 96, 48, 24, 24, 72,  
48, 0, 8, 54, 84, 48, 24, 72, 96

### Theta series of cubic lattice w.r.t. edge

Réf. SPLAG 107.

HIS2 A5876

Euler

HIS1

Produit infini

\* Le motif [4, -5, 4, -3] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 4, -5, 4, -3, \dots *$$

2, 8, 10, 8, 16, 16, 10, 24, 16, 8, 32, 24, 18, 24, 16, 24, 32, 32, 16, 32, 34, 16, 48, 16, 16, 56, 32, 24, 32, 40, 26, 48, 48, 16, 32, 32, 32, 56, 48, 24, 64, 32, 26, 56, 16, 40, 64, 64, 16, 40, 48, 32

### Theta series of cubic lattice w.r.t. square

Réf. SPLAG 107.

HIS2 A5877

Euler

HIS1

Produit infini

\* Le motif [2, -1, 2, -3] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, -1, 2, -3, \dots *$$

4, 8, 8, 16, 12, 8, 24, 16, 16, 24, 16, 16, 28, 32, 8, 32, 32, 16, 40, 16, 16, 40, 40, 32, 36, 16, 24, 48, 32, 24, 40, 48, 16, 56, 32, 16, 64, 40, 32, 32, 36, 40, 48, 48, 32, 48, 48, 16, 80, 40, 24, 80

### Theta series of $D_4$ lattice w.r.t. deep hole

Réf. SPLAG 118.

HIS2 A5879

Euler

HIS1

Produit infini

\* Le motif [4, -4] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 4, -4, \dots *$$

8, 32, 48, 64, 104, 96, 112, 192, 144, 160, 256, 192, 248, 320, 240, 256, 384, 384, 304, 448, 336, 352, 624, 384, 456, 576, 432, 576, 640, 480, 496, 832, 672, 544, 768, 576, 592, 992, 768, 640

### Theta series of $D_4$ lattice w.r.t. edge

Réf.

HIS2 A5880

Euler

HIS1

Produit infini

\* Le motif [4,-4] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 4, -4, \dots *$$

2, 8, 12, 16, 26, 24, 28, 48, 36, 40, 64, 48, 62, 80, 60, 64, 96, 96, 76, 112, 84, 88, 156, 96, 114, 144, 108, 144, 160, 120, 124, 208, 168, 136, 192, 144, 148, 248, 192, 160, 242, 168, 216, 240

### Theta series of planar hexagonal lattice with respect to edge

Réf. JCP 83 6523 85.

HIS2 A5881 Euler

HIS1 Produit infini

\* Le motif [1, -1, 2, -1, 1, -2] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, -1, 2, -1, 1, -2, \dots *$$

2, 2, 0, 4, 2, 0, 4, 0, 0, 4, 4, 0, 2, 2, 0, 4, 0, 0, 4, 4, 0, 4, 0, 0, 6, 0, 0, 0, 4, 0, 4,  
4, 0, 4, 0, 0, 4, 2, 0, 4, 2, 0, 0, 0, 0, 8, 4, 0, 4, 0, 0, 4, 0, 0, 4, 4, 0, 0, 4, 0, 2, 0,  
0, 4, 4, 0, 8, 0, 0, 4, 0, 0, 0, 6

### Theta series of planar hexagonal lattice w.r.t. deep hole

Réf. JCP 83 6524 85.

HIS2 A5882 Euler

HIS1 Produit infini

\* Le motif [1,1,-2] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, 1, -2, \dots *$$

3, 3, 6, 0, 6, 3, 6, 0, 3, 6, 6, 0, 6, 0, 6, 0, 9, 6, 0, 0, 6, 3, 6, 0, 6, 6, 6, 0, 0, 0, 12,  
0, 6, 3, 6, 0, 6, 6, 0, 0, 3, 6, 6, 0, 12, 0, 6, 0, 0, 6, 6, 0, 6, 0, 6, 0, 9, 6, 6, 0, 6, 0,  
0, 0, 6, 9, 6, 0, 0, 6, 6, 0, 12, 0, 6, 0, 6

### Theta series of f.c.c. lattice w.r.t. edge

Réf. JCP 83 6526 85.

**HIS2** A5884 Euler

**HIS1** Produit infini

\* Le motif [2, -1, 2, -3] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, -1, 2, -3, \dots *$$

2, 4, 4, 8, 6, 4, 12, 8, 8, 12, 8, 8, 14, 16, 4, 16, 16, 8, 20, 8, 8, 20, 20, 16, 18, 8, 12, 24, 16, 12, 20, 24, 8, 28, 16, 8, 32, 20, 16, 16, 18, 20, 24, 24, 16, 24, 24, 8, 40, 20, 12, 40, 16, 12, 20

### Theta series of f.c.c. lattice w.r.t. tetrahedral hole

Réf. JCP 83 6526 85.

**HIS2** A5886 Euler

**HIS1** Produit infini

\* Le motif [3,-3] est périodique

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 3, -3, \dots *$$

4, 12, 12, 16, 24, 12, 24, 36, 12, 28, 36, 24, 36, 36, 24, 24, 60, 36, 28, 48, 12, 60, 60, 24, 48, 48, 36, 48, 60, 24, 52, 84, 48, 24, 60, 36, 48, 96, 36, 72, 48, 36, 72, 60, 48, 52, 96, 36, 60, 96

### Centered pentagonal numbers

Réf. INOC 24 4550 85.

HIS2 A5891 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 + 3z + 1}{(1 - z)^3}$$

1, 6, 16, 31, 51, 76, 106, 141, 181, 226, 276, 331, 391, 456, 526, 601, 681, 766, 856, 951, 1051, 1156, 1266, 1381, 1501, 1626, 1756, 1891, 2031, 2176, 2326, 2481, 2641, 2806, 2976

### Square octagonal numbers

Réf. INOC 24 4550 85.

HIS2 A5892 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 9z + 4z^2}{(1 - z)^3}$$

1, 12, 37, 76, 129, 196, 277, 372, 481, 604, 741, 892, 1057, 1236, 1429, 1636, 1857, 2092, 2341, 2604, 2881, 3172, 3477, 3796, 4129, 4476, 4837, 5212, 5601, 6004, 6421, 6852, 7297

### Points on surface of tetrahedron

Réf. MF73 46. CO74. INOC 24 4550 85.

HIS2 A5893 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(1+z^2)}{(1-z)^3}$$

1, 4, 10, 20, 34, 52, 74, 100, 130, 164, 202, 244, 290, 340, 394, 452, 514, 580, 650, 724, 802, 884, 970, 1060, 1154, 1252, 1354, 1460, 1570, 1684, 1802, 1924, 2050, 2180, 2314, 2452, 2594

### Centered tetrahedral numbers

Réf. INOC 24 4550 85.

HIS2 A5894 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(1+z^2)}{(z-1)^4}$$

1, 5, 15, 35, 69, 121, 195, 295, 425, 589, 791, 1035, 1325, 1665, 2059, 2511, 3025, 3605, 4255, 4979, 5781, 6665, 7635, 8695, 9849, 11101, 12455, 13915, 15485, 17169, 18971, 20895



**Points on surface of cube**

Réf. MF73 46. CO74. INOC 24 4550 85.

HIS2 A5897 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 + z) (1 + 4z + z^2)}{(1 - z)^3}$$

1, 8, 26, 56, 98, 152, 218, 296, 386, 488, 602, 728, 866, 1016, 1178, 1352, 1538, 1736, 1946, 2168, 2402, 2648, 2906, 3176, 3458, 3752, 4058, 4376, 4706, 5048, 5402, 5768, 6146, 6536

**Centered cube numbers**

Réf. AMM 82 819 75. INOC 24 4550 85.

HIS2 A5898 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 + z) (1 + 4z + z^2)}{(z - 1)^4}$$

1, 9, 35, 91, 189, 341, 559, 855, 1241, 1729, 2331, 3059, 3925, 4941, 6119, 7471, 9009, 10745, 12691, 14859, 17261, 19909, 22815, 25991, 29449, 33201, 37259, 41635, 46341, 51389, 56791

### Points on surface of octahedron

Réf. MF73 46. CO74. INOC 24 4550 85.

HIS2 A5899 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)^3}{(1-z)^3}$$

1, 6, 18, 38, 66, 102, 146, 198, 258, 326, 402, 486, 578, 678, 786, 902, 1026, 1158, 1298, 1446, 1602, 1766, 1938, 2118, 2306, 2502, 2706, 2918, 3138, 3366, 3602, 3846, 4098, 4358, 4626

### Octahedral numbers

Réf. CO74. INOC 24 4550 85.

HIS2 A5900 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)^2}{(z-1)^4}$$

1, 6, 19, 44, 85, 146, 231, 344, 489, 670, 891, 1156, 1469, 1834, 2255, 2736, 3281, 3894, 4579, 5340, 6181, 7106, 8119, 9224, 10425, 11726, 13131, 14644, 16269, 18010, 19871, 21856

### Points on surface of cuboctahedron (or icosahedron)

Réf. RO69 109. MF73 46. CO74. INOC 24 4550 85.

HIS2 A5901 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(z^2+8z+1)}{(1-z)^3}$$

1, 12, 42, 92, 162, 252, 362, 492, 642, 812, 1002, 1212, 1442, 1692, 1962, 2252, 2562, 2892, 3242, 3612, 4002, 4412, 4842, 5292, 5762, 6252, 6762, 7292, 7842, 8412, 9002, 9612, 10242, 10892

### Centered icosahedral (or cuboctahedral) numbers

Réf. INOC 24 4550 85.

HIS2 A5902 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(z^2+8z+1)}{(z-1)^4}$$

1, 13, 55, 147, 309, 561, 923, 1415, 2057, 2869, 3871, 5083, 6525, 8217, 10179, 12431, 14993, 17885, 21127, 24739, 28741, 33153, 37995, 43287, 49049, 55301, 62063, 69355, 77197, 85609

### Points on surface of dodecahedron

Réf. INOC 24 4550 85.

HIS2 A5903 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(z^2+28z+1)}{(1-z)^3}$$

1, 32, 122, 272, 482, 752, 1082, 1472, 1922, 2432, 3002, 3632, 4322, 5072, 5882, 6752, 7682, 8672, 9722, 10832, 12002, 13232, 14522, 15872, 17282, 18752, 20282, 21872, 23522, 25232

### Centered dodecahedral numbers

Réf. INOC 24 4550 85.

HIS2 A5904 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(z^2+28z+1)}{(z-1)^4}$$

1, 33, 155, 427, 909, 1661, 2743, 4215, 6137, 8569, 11571, 15203, 19525, 24597, 30479, 37231, 44913, 53585, 63307, 74139, 86141, 99373, 113895, 129767, 147049, 165801, 186083

### Points on surface of truncated tetrahedron

Réf. C074. INOC 24 4552 85.

HIS2 A5905 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(z^2+12z+1)}{(1-z)^3}$$

1, 16, 58, 128, 226, 352, 506, 688, 898, 1136, 1402, 1696, 2018, 2368, 2746, 3152, 3586, 4048, 4538, 5056, 5602, 6176, 6778, 7408, 8066, 8752, 9466, 10208, 10978, 11776, 12602, 13456

### Truncated tetrahedral numbers

Réf. C074. INOC 24 4552 85.

HIS2 A5906 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1+12z+10z^2}{(z-1)^4}$$

1, 16, 68, 180, 375, 676, 1106, 1688, 2445, 3400, 4576, 5996, 7683, 9660, 11950, 14576, 17561, 20928, 24700, 28900, 33551, 38676, 44298, 50440, 57125, 64376, 72216, 80668, 89755

### Truncated octahedral numbers

Réf. CO74. INOC 24 4552 85.

HIS2 A5910 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 34z + 55z^2 + 6z^3}{(z - 1)^4}$$

1, 38, 201, 586, 1289, 2406, 4033, 6266, 9201, 12934, 17561, 23178, 29881, 37766, 46929, 57466, 69473, 83046, 98281, 115274, 134121, 154918, 177761, 202746, 229969, 259526, 291513

### Points on surface of truncated cube

Réf. INOC 24 4552 85.

HIS2 A5911 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 + z)(z^2 + 44z + 1)}{(1 - z)^3}$$

1, 48, 186, 416, 738, 1152, 1658, 2256, 2946, 3728, 4602, 5568, 6626, 7776, 9018, 10352, 11778, 13296, 14906, 16608, 18402, 20288, 22266, 24336, 26498, 28752, 31098, 33536, 36066

### Truncated cube numbers

Réf. INOC 24 4552 85.

HIS2 A5912 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 52z + 93z^2 + 8z^3}{(z - 1)^4}$$

1, 56, 311, 920, 2037, 3816, 6411, 9976, 14665, 20632, 28031, 37016, 47741, 60360, 75027, 91896, 111121, 132856, 157255, 184472, 214661, 247976, 284571, 324600, 368217, 415576, 466831

### Points on surface of hexagonal prism

Réf. INOC 24 4552 85.

HIS2 A5914 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 + z)(z^2 + 10z + 1)}{(1 - z)^3}$$

1, 14, 50, 110, 194, 302, 434, 590, 770, 974, 1202, 1454, 1730, 2030, 2354, 2702, 3074, 3470, 3890, 4334, 4802, 5294, 5810, 6350, 6914, 7502, 8114, 8750, 9410, 10094, 10802, 11534, 12290

### Hexagonal prism numbers

Réf. INOC 24 4552 85.

HIS2 A5915 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 10z + 7z^2}{(z - 1)^4}$$

1, 14, 57, 148, 305, 546, 889, 1352, 1953, 2710, 3641, 4764, 6097, 7658, 9465, 11536, 13889, 16542, 19513, 22820, 26481, 30514, 34937, 39768, 45025, 50726, 56889, 63532, 70673, 78330

### Rhombic dodecahedral numbers

Réf. AMM 82 819 75. INOC 24 4552 85.

HIS2 A5917 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 + z)(z^2 + 10z + 1)}{(z - 1)^4}$$

1, 15, 65, 175, 369, 671, 1105, 1695, 2465, 3439, 4641, 6095, 7825, 9855, 12209, 14911, 17985, 21455, 25345, 29679, 34481, 39775, 45585, 51935, 58849, 66351, 74465, 83215, 92625



### Points on surface of square pyramid

Réf. C074. INOC 24 4552 85.

HIS2 A5918 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(z^2+z+1)}{(1-z)^3}$$

1, 5, 14, 29, 50, 77, 110, 149, 194, 245, 302, 365, 434, 509, 590, 677, 770, 869, 974, 1085, 1202, 1325, 1454, 1589, 1730, 1877, 2030, 2189, 2354, 2525, 2702, 2885, 3074, 3269, 3470, 3677

### Points on surface of tricapped prism

Réf. INOC 24 4552 85.

HIS2 A5919 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(z^2+5z+1)}{(1-z)^3}$$

1, 9, 30, 65, 114, 177, 254, 345, 450, 569, 702, 849, 1010, 1185, 1374, 1577, 1794, 2025, 2270, 2529, 2802, 3089, 3390, 3705, 4034, 4377, 4734, 5105, 5490, 5889, 6302, 6729, 7170, 7625

**Tricapped prism numbers**

Réf. INOC 24 4552 85.

HIS2 A5920 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 5z + 3z^2}{(z - 1)^4}$$

1, 9, 33, 82, 165, 291, 469, 708, 1017, 1405, 1881, 2454, 3133, 3927, 4845,  
5896, 7089, 8433, 9937, 11610, 13461, 15499, 17733, 20172, 22825, 25701,  
28809, 32158, 35757, 39615, 43741

**From solution to a difference equation**

Réf. FQ 25 363 87.

HIS2 A5921 Dérivée logarithmique F.G. exponentielle

HIS1 Fraction rationnelle

$$\frac{(z + 1)^2}{z^2 - z + 1}$$

1, 3, 10, 48, 312, 2520, 24480, 277200, 3588480, 52254720

**n-step mappings with 4 inputs**

Réf. PRV A32 2342 85.

HIS2 A5945      Approximants de Padé      Conjecture

HIS1              exponentielle

$$\exp(z) \left( 1 + 14z + 31/2 z^2 + 3z^3 \right)$$

1, 15, 60, 154, 315, 561, 910

**Sum of cubes of Fibonacci numbers**

Réf. BR72 18.

HIS2 A5968      Approximants de Padé

HIS1              Fraction rationnelle

$$\frac{1 - 2z - z^2}{(z - 1) (1 - 4z - z^2) (z^2 - z - 1)}$$

1, 2, 10, 37, 162, 674, 2871, 12132, 51436, 217811, 922780, 3908764,  
 16558101, 70140734, 297121734, 1258626537, 5331629710, 22585142414,  
 95672204155, 405273951280

### Sum of fourth powers of Fibonacci numbers

Réf. BR72 19.

HIS2 A5969 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)(1-5z+z^2)}{(z^2-7z+1)(z^2+3z+1)(z-1)^2}$$

1, 2, 18, 99, 724, 4820, 33381, 227862, 1564198, 10714823, 73457064,  
503438760, 3450734281, 23651386922, 162109796922, 1111115037483,  
7615701104764, 52198777931900

### Sum of squares of Lucas numbers

Réf. BR72 20.

HIS2 A5970 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1+7z-4z^2}{(1-z)(1+z)(1-3z+z^2)^2}$$

1, 10, 26, 75, 196, 520, 1361, 3570, 9346, 24475, 64076, 167760, 439201,  
1149850, 3010346, 7881195, 20633236, 54018520, 141422321, 370248450,  
969323026, 2537720635

### Sum of cubes of Lucas numbers

Réf. BR72 21.

HIS2 A5971 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 24z - 23z^2 - 8z^3}{(z - 1)(1 - 4z - z^2)(z^2 - z - 1)}$$

1, 28, 92, 435, 1766, 7598, 31987, 135810, 574786, 2435653, 10316252,  
43702500, 185123261, 784200368, 3321916912, 14071880655,  
59609419066, 252509590018, 1069647725567

### Sum of fourth powers of Lucas numbers

Réf. BR72 21.

HIS2 A5972 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 76z - 164z^2 - 79z^3 + 16z^4}{(z^2 - 7z + 1)(z^2 + 3z + 1)(z - 1)^2}$$

1, 82, 338, 2739, 17380, 122356, 829637, 5709318, 39071494, 267958135,  
1836197336, 12586569192, 86266785673, 591288786874, 4052734152890,  
27777904133691

### Longest walk on edges of n-cube

Réf. clm.

HIS2 A5985

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + 2z - 4z^2 + 4z^3}{(1-z)(1+2z)(1+z)(2z-1)^2}$$

1, 4, 9, 32, 65, 192, 385, 1024, 2049, 5120, 10241, 24576, 49153, 114688,  
229377, 524288, 1048577, 2359296, 4718593, 10485760, 20971521,  
46137344, 92274689, 201326592

### Column-strict plane partitions of n

Réf. SAM 50 260 71.

HIS2 A5986

Euler

HIS1

Produit infini

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 2, 2, 3, 3, 4, 4, 5, 5, \dots$$

1, 2, 5, 11, 23, 45, 87, 160, 290, 512, 889, 1514, 2547, 4218, 6909, 11184,  
17926, 28449, 44772, 69862, 108205, 166371, 254107, 385617, 581729,  
872535, 1301722, 1932006, 2853530

## Symmetric plane partitions of n

Réf. SAM 50 261 71.

HIS2 A5987 Euler

HIS1 Produit infini

\*  $c(n) = 1$  si n est impair et  $\lfloor n/4 \rfloor$  si n est pair.

$$\prod_{n \geq 1} \frac{1}{(1 - z^n)^{c(n)}}$$

$$c(n) = 1, 0, 1, 1, 1, 1, 1, 2, 1, 2, 1, \dots *$$

1, 1, 1, 2, 3, 4, 6, 8, 12, 16, 22, 29, 41, 53, 71, 93, 125, 160, 211, 270, 354, 450, 581, 735, 948, 1191, 1517, 1902, 2414, 3008, 3791, 4709, 5909, 7311, 9119, 11246, 13981, 17178, 21249

## Paraffins

Réf. BER 30 1919 1897.

HIS2 A5993 Euler

HIS1 Fraction rationnelle

$$\frac{1 - z^4}{(1 - z^2)(1 - z^3)}$$

1, 2, 6, 10, 19, 28, 44, 60, 85, 110

**Paraffins**

Réf. BER 30 1919 1897.

HIS2 A5994 Euler

HIS1 Fraction rationnelle

$$\frac{1 - z^4}{(1 - z)^3 (1 - z^2)^3}$$

1, 3, 9, 19, 38, 66, 110, 170, 255, 365

**Paraffins**

Réf. BER 30 1919 1897.

HIS2 A5995 Euler

HIS1 Fraction rationnelle

$$\frac{(1 - z^4)^6 (1 - z^8)^{18}}{(1 - z)^3 (1 - z^2)^6 (1 - z^6)^8}$$

1, 3, 12, 28, 66, 126, 236, 396, 651, 1001



**Paraffins**

Réf. BER 30 1920 1897.

HIS2 A5996 Euler

HIS1 Fraction rationnelle

$$\frac{1 - z^3}{(1 - z)^3 (1 - z^2)^2}$$

2, 6, 16, 30, 54, 84, 128, 180, 250, 330

**Paraffins**

Réf. BER 30 1922 1897.

HIS2 A6000 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 2z^2}{(z - 1)^4}$$

1, 4, 12, 28, 55, 96, 154, 232, 333

**Paraffins****Réf.** BER 30 1922 1897.**HIS2** A6001      Approximants de Padé**HIS1**              Fraction rationnelle

$$\frac{1 + 2z^3}{(z - 1)^4}$$

1, 4, 10, 22, 43, 76, 124, 190, 277

**Paraffins****Réf.** BER 30 1922 1897.**HIS2** A6003      Approximants de Padé**HIS1**              Fraction rationnelle

$$\frac{1 - z^3}{(1 - z)^5}$$

1, 5, 15, 34, 65, 111, 175, 260

**Paraffins**

Réf. BER 30 1922 1897.

HIS2 A6004 Euler

HIS1 Fraction rationnelle

$$\frac{(1 - z^4)^4 (1 - z^5)^5 (1 - z^6)^6}{(1 - z)^4 (1 - z^2)^2 (1 - z^3)^3 (1 - z^7)^7}$$

1, 4, 11, 25, 49, 86, 139, 211

**Paraffins**

Réf. BER 30 1923 1897.

HIS2 A6007 Euler

HIS1 Fraction rationnelle

$$\frac{1 - z^4}{(1 - z)^5 (1 - z^2)^2}$$

1, 5, 16, 40, 85, 161, 280, 456

**Paraffins****Réf.** BER 30 1923 1897. GA66 246.**HIS2** A6008      Approximants de Padé**HIS1**              Fraction rationnelle

$$\frac{z (1 + z) (1 - z + z^2)}{(1 - z)^5}$$

0, 1, 5, 15, 36, 75, 141, 245, 400, 621, 925, 1331, 1860, 2535, 3381, 4425,  
 5696, 7225, 9045, 11191, 13700, 16611, 19965, 23805, 28176, 33125, 38701,  
 44955, 51940, 59711, 68325

**Paraffins****Réf.** BER 30 1923 1897.**HIS2** A6011      Approximants de Padé**HIS1**              Fraction rationnelle

$$\frac{1 + z}{(1 - z)^5}$$

3, 18, 60, 150, 315, 588, 1008, 1620

Réf. GK90 86.

**HIS2** A6012 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{1 - 2z}{1 - 4z + 2z^2}$$

1, 2, 6, 20, 68, 232, 792, 2704, 9232, 31520, 107616, 367424, 1254464,  
4283008, 14623104, 49926400, 170459392, 581984768, 1987020288,  
6784111616, 23162405888, 79081400320

Réf. dek.

**HIS2** A6013 Inverse fonctionnel Suite P-récurrente

**HIS1** algébrique

$${}_3F_2([1, 4/3, 2/3], [2, 3/2], 27z/4)$$

1, 2, 7, 30, 143, 728, 3876, 21318, 120175, 690690, 4032015, 23841480,  
142498692, 859515920, 5225264024, 31983672534, 196947587823,  
1219199353190, 7583142491925, 47365474641870

Réf. rkg.

**HIS2** A6040

P-réurrences

Suite P-récurrente

**HIS1**

$$a(n) = (-n^2 + 4n - 4) a(n-2) + (n^2 - 2n + 2) a(n-1)$$

1, 2, 9, 82, 1313, 32826, 1181737, 57905114, 3705927297, 300180111058, 30018011105801, 3632179343801922, 523033825507476769, 88392716510763573962

Réf. rkg.

**HIS2** A6041

P-réurrences

Suite P-récurrente

**HIS1**

$$(n-1) a(n) = (n^2 - 3n + 3) n a(n-1) + (-n^2 + 4n - 3) n a(n-2)$$

0, 2, 9, 76, 1145, 27486, 962017, 46176824, 2909139921, 232731193690, 23040388175321, 2764846581038532, 395373061088510089, 66422674262869694966

### A traffic light problem

Réf. BIO 46 422 59.

HIS2 A6043      Hypergéométrique

HIS1              Fraction rationnelle

$$\frac{2}{(1 - 3z)^3}$$

2, 18, 108, 540, 2430

### Square hex numbers

Réf. GA88 19.

HIS2 A6051      Approximants de Padé

HIS1              Fraction rationnelle

$$\frac{1 - 26z + z^2}{(1 - z)(z^2 - 194z + 1)}$$

1, 169, 32761, 6355441, 1232922769, 239180661721, 46399815451081,  
9001325016847969, 1746210653453054881, 338755865444875798921,  
65716891685652451935769

### Triangular star numbers

Réf. GA88 20.

HIS2 A6060

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + 58z + z^2}{(1 - z)(z^2 - 194z + 1)}$$

1, 253, 49141, 9533161, 1849384153, 358770992581, 69599723176621,  
13501987525271953, 2619315980179582321, 508133798167313698381,  
98575337528478677903653

### Square star numbers

Réf. GA88 22.

HIS2 A6061

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{z^2 + 22z + 1}{(1 - z)(z^2 - 98z + 1)}$$

1, 121, 11881, 1164241, 114083761, 11179044361, 1095432263641,  
107341182792481, 10518340481399521, 1030690025994360601,  
100997104206965939401



**Star-hex numbers**

Réf. GA88 22. JRM 16 192 83.

HIS2 A6062 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1+z)^2}{(1-z)(z^2-34z+1)}$$

1, 37, 1261, 42841, 1455337, 49438621, 1679457781, 57052125937,  
1938092824081, 65838103892821, 2236557439531837

**Maximal length rook tour on n X n board**

Réf. GA86 76.

HIS2 A6071 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1+z+4z^2+6z^3-5z^4+z^5}{(1+z)(z-1)^4}$$

1, 4, 14, 38, 76, 136, 218, 330, 472, 652, 870, 1134

### Gaussian binomial coefficient [n,2] for q=2

Réf. GJ83 99. ARS A17 328 84.

HIS2 A6095 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 2z) (1 - 4z)$$

1, 7, 35, 155, 651, 2667, 10795, 43435, 174251, 698027, 2794155, 11180715,  
44731051, 178940587, 715795115, 2863245995, 11453115051,  
45812722347, 183251413675

### Gaussian binomial coefficient [n,3] for q=2

Réf. GJ83 99. ARS A17 328 84.

HIS2 A6096 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 2z) (1 - 4z) (1 - 8z)$$

1, 15, 155, 1395, 11811, 97155, 788035, 6347715, 50955971, 408345795,  
3269560515, 26167664835, 209386049731, 1675267338435,  
13402854502595, 107225699266755, 857817047249091

### Gaussian binomial coefficient [n,4] for q=2

Réf. GJ83 99. ARS A17 328 84.

HIS2 A6097 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 2 z) (1 - 4 z) (1 - 8 z) (1 - 16 z)$$

1, 31, 651, 11811, 200787, 3309747, 53743987, 866251507, 13910980083,  
222984027123, 3571013994483, 57162391576563, 914807651274739,  
14638597687734259

### Gaussian binomial coefficient [n,2] for q=3

Réf. GJ83 99. ARS A17 328 84.

HIS2 A6100 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 3 z) (1 - 9 z)$$

1, 13, 130, 1210, 11011, 99463, 896260, 8069620, 72636421, 653757313,  
5883904390, 52955405230, 476599444231, 4289397389563,  
38604583680520, 347441274648040, 3126971536402441

### Gaussian binomial coefficient [n,3] for q=3

Réf. GJ83 99. ARS A17 328 84.

HIS2 A6101 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 3 z) (1 - 9 z) (1 - 27 z)$$

1, 40, 1210, 33880, 925771, 25095280, 678468820, 18326727760,  
494894285941, 13362799477720, 360801469802830, 9741692640081640,  
263026177881648511, 7101711092201899360

### Gaussian binomial coefficient [n,4] for q=3

Réf. GJ83 99. ARS A17 328 84.

HIS2 A6102 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 3 z) (1 - 9 z) (1 - 27 z) (1 - 81 z)$$

1, 121, 11011, 925771, 75913222, 6174066262, 500777836042,  
40581331447162, 3287582741506063, 266307564861468823,  
2157127355248777493, 1747282899667791058573

**Gaussian binomial coefficient [n,2] for q=4**

Réf. GJ83 99. ARS A17 328 84.

HIS2 A6105      Approximants de Padé

HIS1              Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 4z) (1 - 16z)$$

1, 21, 357, 5797, 93093, 1490853, 23859109, 381767589, 6108368805,  
 97734250405, 1563749404581, 25019996065701, 400319959420837,  
 6405119440211877, 102481911401303973

**Gaussian binomial coefficient [n,3] for q=4**

Réf. GJ83 99. ARS A17 328 84.

HIS2 A6106      Approximants de Padé

HIS1              Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 4z) (1 - 16z) (1 - 64z)$$

1, 85, 5797, 376805, 24208613, 1550842085, 99277752549, 6354157930725,  
 406672215935205, 26027119554103525, 1665737215212030181,  
 106607206793565997285

### Gaussian binomial coefficient [n,5] for q=2

Réf. GJ83 99. ARS A17 328 84.

HIS2 A6110 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 2 z) (1 - 4 z) (1 - 8 z) (1 - 16 z) (1 - 32 z)$$

1, 63, 2667, 97155, 3309747, 109221651, 3548836819, 114429029715,  
 3675639930963, 117843461817939, 3774561792168531,  
 120843139740969555, 3867895279362300499

### Gaussian binomial coefficient [n,2] for q=5

Réf. GJ83 99. ARS A17 329 84.

HIS2 A6111 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 5 z) (1 - 25 z)$$

1, 31, 806, 20306, 508431, 12714681, 317886556, 7947261556,  
 198682027181, 4967053120931, 124176340230306, 3104408566792806,  
 77610214474995931, 1940255363400777181

### Gaussian binomial coefficient [n,3] for q=5

Réf. GJ83 99. ARS A17 329 84.

HIS2 A6112 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$(1 - z) (1 - 5z) (1 - 25z) (1 - 125z)$$

1, 156, 20306, 2558556, 320327931, 40053706056, 5007031143556,  
625886840206056, 78236053707784181, 9779511680526143556,  
1222439084242108174806

Réf. FQ 15 24 77.

HIS2 A6130 Approximants de Padé

HIS1 Fraction rationnelle

$$1$$


---


$$\frac{1}{1 - z - 3z^2}$$

1, 1, 4, 7, 19, 40, 97, 217, 508, 1159, 2683, 6160, 14209, 32689, 75316,  
173383, 399331, 919480, 2117473, 4875913, 11228332, 25856071,  
59541067, 137109280, 315732481

Réf. FQ 15 24 77.

HIS2 A6131 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1}{1 - z - 4z^2}$$

1, 1, 5, 9, 29, 65, 181, 441, 1165, 2929, 7589, 19305, 49661, 126881, 325525, 833049, 2135149, 5467345, 14007941, 35877321, 91909085, 235418369, 603054709, 1544728185

Réf. FQ 11 52 73.

HIS2 A6138 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z}{1 - z - 3z^2}$$

1, 2, 5, 11, 26, 59, 137, 314, 725, 1667, 3842, 8843, 20369, 46898, 108005, 248699, 572714, 1318811, 3036953, 6993386, 16104245, 37084403, 85397138, 196650347, 452841761



Réf. FQ 27 434 89.

**HIS2** A6139

LLL

Suite P-récurrente

**HIS1**

algébrique

$$(n - 1) a(n) = (4n - 6) a(n - 1) + (4n - 8) a(n - 2)$$

1

$$\frac{1}{(1 - 4z - 4z^2 - 4z^{1/2})}$$

1, 2, 8, 32, 136, 592, 2624, 11776, 53344, 243392, 1116928, 5149696,  
23835904, 110690816, 515483648, 2406449152, 11258054144,  
52767312896, 247736643584

### Dyck paths

Réf. SC83.

**HIS2** A6149

Hypergéométrique

Suite P-récurrente

**HIS1**

$${}_4F_3 ([1, 1/2, 3/2, 5/2], [4, 5, 6], 64z)$$

1, 1, 4, 30, 330, 4719, 81796, 1643356, 37119160, 922268360, 24801924512,  
713055329720

**Dyck paths**

Réf. SC83.

**HIS2** A6150

Hypergéométrie

Suite P-récurrente

**HIS1**

$${}_5F_4 \left( [1, 1/2, 7/2, 5/2, 3/2], \right. \\ \left. [5, 6, 7, 8], 256 z \right)$$

1, 1, 5, 55, 1001, 26026, 884884, 37119160, 1844536720, 105408179176,  
6774025632340

**Dyck paths**

Réf. SC83.

**HIS2** A6151

Recoupements

Suite P-récurrente

**HIS1**

$${}_6F_5 \left( [1, 1/2, 3/2, 5/2, 7/2, 9/2], \right. \\ \left. [6, 7, 8, 9, 10], 1024 z \right)$$

1, 1, 6, 91, 2548, 111384, 6852768, 553361016, 55804330152,  
6774025632340

**Expansion of  $z \exp(z/(1-z))$** **Réf.** ARS 10 142 80.**HIS2** A6152 Dérivée logarithmique Suite P-récurrente**HIS1** exponentielle

$$a(n) = (2n - 2) a(n - 1) + (-n^2 + 5n - 5) a(n - 2) + (-n^2 + 6n - 8) a(n - 3)$$

$$\frac{z^2 - z + 1}{\exp(1/(1-z)) (z - 1)^2}$$

1, 2, 9, 52, 365, 3006, 28357, 301064, 3549177, 45965530, 648352001,  
 9888877692, 162112109029, 2841669616982, 53025262866045,  
 1049180850990736, 21937381717388657

**Réf.** RAIRO 12 58 78.**HIS2** A6157 Dérivée logarithmique f.g. exponentielle**HIS1** Fraction rationnelle

$$\frac{1 + z}{(1 - z)^4}$$

1, 5, 28, 180, 1320, 10920, 100800, 1028160, 11491200, 139708800,  
 1836172800, 25945920000, 392302310400, 6320426112000,  
 108101081088000, 1956280854528000

### From sum of 1/F(n)

Réf. FQ 16 169 78.

**HIS2** A6172 Approximants de Padé

**HIS1** Fraction rationnelle

F(n) : Nombres de Fibonacci

$$\frac{2 + 3z - 19z^2 + 17z^3 - 4z^4}{(z-1)(z^2 - z - 1)(1 - 3z + z^2)}$$

2, 9, 10, 42, 79, 252, 582, 1645, 4106, 11070, 28459, 75348, 195898

### $(k+1)! C(n-2,k)/2, k=0\dots n-2$

Réf. DM 55 272 85.

**HIS2** A6183 Dérivée logarithmique Suite P-récurrente

**HIS1** exponentielle

$a(n) = (1 + n) a(n - 1) + (2 - n) a(n - 2)$

$$\frac{2 \exp(z)}{(1 - z)^2}$$

2, 6, 22, 98, 522, 3262, 23486, 191802, 1753618, 17755382, 197282022,  
2387112466, 31249472282, 440096734638, 6635304614542,  
106638824162282, 1819969265702946

Réf. FQ 15 292 77. ARS 6 168 78.

**HIS2** A6190 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{1}{1 - 3z - z^2}$$

1, 3, 10, 33, 109, 360, 1189, 3927, 12970, 42837, 141481, 467280, 1543321, 5097243, 16835050, 55602393, 183642229, 606529080, 2003229469, 6616217487, 21851881930

### Partitions into pairs

Réf. PLIS 23 65 78.

**HIS2** A6198 équations différentielles Suite P-récurrente

**HIS1** exponentielle Formule de B. Salvy

$$a(n) = (2n - 2)a(n - 1) + (2n - 4)a(n - 2) + a(n - 3)$$

$$\frac{2 - 2z - (1 - 2z)^{1/2}}{(1 - 2z)^{3/2} \exp(1 - (1 - 2z)^{1/2})}$$

1, 1, 6, 41, 365, 3984, 51499, 769159, 13031514, 246925295, 5173842311, 118776068256, 2964697094281, 79937923931761, 2315462770608870, 71705109685449689

### Partitions into pairs

Réf. PLIS 23 65 78.

HIS2 A6199

P-réurrences

Suite P-récurrente

HIS1

$$a(n) = 2n a(n-1) + (2n-6)$$

$$a(n-3) + a(n-4) + (2n-3) a(n-2)$$

1, 3, 21, 185, 2010, 25914, 386407, 6539679, 123823305, 2593076255,  
59505341676, 1484818160748, 40025880386401, 1159156815431055,  
35891098374564105

### Partitions into pairs

Réf. PLIS 23 65 78.

HIS2 A6200

P-réurrences

Suite P-récurrente

HIS1

$$a(n) (n-1) =$$

$$(2 + 6n - 2n^2) a(n-2)$$

$$+ (-6 + 2n + 2n^2) a(n-1) - n a(n-3)$$

1, 6, 55, 610, 7980, 120274, 2052309, 39110490, 823324755, 18974858540,  
475182478056, 12848667150956, 373081590628565, 11578264139795430,  
382452947343624515

### From continued fraction for Zeta(3)

Réf. LNM 751 68 79.

HIS2 A6221 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z (1 + z) (5 z^2 + 92 z + 5)}{(z - 1)^4}$$

0, 5, 117, 535, 1463, 3105, 5665, 9347, 14355, 20893, 29165, 39375, 51727, 66425, 83673, 103675, 126635, 152757, 182245, 215303, 252135, 292945, 337937, 387315, 441283, 500045

Réf. LNM 751 68 79.

HIS2 A6222 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{3 + 16 z + 3 z^2}{(1 - z)^3}$$

3, 25, 69, 135, 223, 333, 465, 619, 795, 993, 1213, 1455, 1719, 2005, 2313, 2643, 2995, 3369, 3765, 4183, 4623, 5085, 5569, 6075, 6603, 7153, 7725, 8319, 8935, 9573, 10233, 10915

### Binary trees of height n requiring 3 registers

Réf. TCS 9 105 79.

**HIS2** A6223      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{1}{(2z - 1) (2z^4 - 16z^3 + 20z^2 - 8z + 1) (1 - 4z + 2z^2)}$$

1, 14, 118, 780, 4466, 23276, 113620, 528840, 2375100, 10378056,  
44381832, 186574864, 773564328, 3171317360, 12880883408,  
51915526432, 207893871472, 827983736608

Réf. AMM 28 114 21. JO61 150. jos.

**HIS2** A6228      équations différentielles    Suite P-récurrente

**HIS1**              exponentielle

$a(n) = (n^2 - 6n + 10) a(n - 2)$

**exp(arcsin(z))**

1, 1, 1, 2, 5, 20, 85, 520, 3145, 26000, 204425, 2132000, 20646925,  
260104000, 2993804125, 44217680000, 589779412625, 9993195680000,  
151573309044625, 2898026747200000



**Bitriangular permutations**

Réf. DMJ 13 267 46.

**HIS2** A6230 Approximants de Padé**HIS1** Fraction rationnelle

$$(1 + z) (1 + 6 z)$$

---


$$(1 - z) (1 - 2 z) (1 - 3 z)$$

1, 13, 73, 301, 1081, 3613, 11593, 36301, 111961, 342013, 1038313,  
 3139501, 9467641, 28501213, 85700233, 257493901, 773268121,  
 2321377213, 6967277353, 20908123501

 **$n(n-1) \dots (n-k+1)/k, k=2..n$** 

Réf. .rkg.

**HIS2** A6231 P-réurrences Suite P-récurrente**HIS1** exponentielleUne solution de l'équation différentielle existe avec la fonction  $Ei(z)$ , B. Salvy.

$$a(n) = (n + 3) a(n - 1)$$

$$+ (-3n - 1) a(n - 2)$$

$$+ (3n - 3) a(n - 3)$$

$$+ (-n + 2) a(n - 4)$$

0, 1, 5, 20, 84, 409, 2365, 16064, 125664, 1112073, 10976173, 119481284,  
 1421542628, 18348340113, 255323504917, 3809950976992,  
 60683990530208, 1027542662934897

Réf. JCT B24 208 78.

HIS2 A6234 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2z - 1}{(1 - 3z)^2}$$

1, 4, 15, 54, 189, 648, 2187, 7290, 24057, 78732, 255879, 826686, 2657205, 8503056, 27103491, 86093442, 272629233, 860934420, 2711943423, 8523250758, 26732013741

### Complexity of doubled cycle

Réf. JCT B24 208 78.

HIS2 A6235 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 2z - 10z^2 + 2z^3 + z^4}{(z - 1)^2 (1 - 4z + z^2)^2}$$

1, 12, 75, 384, 1805, 8100, 35287, 150528, 632025, 2620860, 10759331, 43804800, 177105253, 711809364, 2846259375, 11330543616, 44929049777, 177540878700, 699402223099

### Triangular hex numbers

Réf. GA88 19. jos.

HIS2 A6244 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - 8z + z^2}{(1 - z)(z^2 - 98z + 1)}$$

1, 91, 8911, 873181, 85562821, 8384283271, 821574197731,  
80505887094361, 7888755361049641, 773017519495770451,  
75747828155224454551, 7422514141692500775541

### Stacking bricks

Réf. GKP 360.

HIS2 A6253 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - z}{(1 + z)(1 - 4z + z^2)}$$

1, 2, 9, 32, 121, 450, 1681, 6272, 23409, 87362, 326041, 1216800, 4541161,  
16947842, 63250209, 236052992, 880961761, 3287794050, 12270214441,  
45793063712, 170902040409

Réf. MIS 4(3) 32 75.

HIS2 A6261 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 - z + z^2) (1 - 3z + 3z^2)}{(z - 1)^6}$$

1, 2, 4, 8, 16, 32, 63, 120, 219, 382, 638, 1024, 1586, 2380, 3473, 4944, 6885, 9402, 12616, 16664, 21700, 27896, 35443, 44552, 55455, 68406, 83682, 101584, 122438, 146596, 174437

### Rooted genus-2 maps with n edges

Réf. WA71. JCT 13 215 72.

HIS2 A6298 Hypergéométrique Suite P-récurrente

HIS1 algébrique

$$\frac{21 z (1 + z)}{(1 - 4z)^{11/2}}$$

21, 483, 6468, 66066, 570570, 4390386, 31039008, 205633428, 1293938646, 7808250450, 45510945480

### Royal paths in a lattice

Réf. CRO 20 12 73.

**HIS2** A6318 Inverse fonctionnel Suite P-récurrente  
**HIS1** algébrique

$$n a(n) = (6n - 9) a(n - 1) + (-n + 3) a(n - 2)$$

$$\frac{1}{2} - \frac{1}{2} z - \frac{1}{2} (1 - 6z + z^2)^{1/2}$$

1, 2, 6, 22, 90, 394, 1806, 8558, 41586, 206098, 1037718, 5293446,  
 27297738, 142078746, 745387038, 3937603038, 20927156706,  
 111818026018, 600318853926, 3236724317174

### Royal paths in a lattice

Réf. CRO 20 18 73.

**HIS2** A6319 Inverse fonctionnel Suite P-récurrente  
**HIS1** algébrique

$$(n + 1) a(n) = (n - 4) a(n - 3) + (7n - 4) a(n - 1) + (-7n + 17) a(n - 2)$$

$S(z)$  est son propre inverse fonctionnel

$$\left( \frac{1}{2} - \frac{1}{2} z - \frac{1}{2} (1 - 6z + z^2)^{1/2} \right)^2$$

1, 4, 16, 68, 304, 1412, 6752, 33028, 164512, 831620, 4255728, 22004292,  
 114781008, 603308292, 3192216000, 16989553668, 90890869312,  
 488500827908, 2636405463248

### Royal paths in a lattice

Réf. CRO 20 18 73.

**HIS2** A6320 Inverse fonctionnel Suite P-récurrente  
**HIS1** algébrique

$$(n + 2) a(n) = (9n - 30) a(n - 3) + (-n + 5) a(n - 4) + (9n + 3) a(n - 1)$$

$$\left( \frac{1}{2} - \frac{1}{2} z - \frac{1}{2} (1 - 6z + z^2)^{\frac{1}{2}} \right)^3$$

1, 6, 30, 146, 714, 3534, 17718, 89898, 461010, 2386390, 12455118,  
 65478978, 346448538, 1843520670, 9859734630, 52974158938,  
 285791932578, 1547585781414, 8408765223294

### Royal paths in a lattice

Réf. CRO 20 18 73.

**HIS2** A6321 LLL Suite P-récurrente  
**HIS1** algébrique

$$(n + 3) a(n) = n a(n - 5) + (36n - 88) a(n - 3) + (-11n + 47) a(n - 4) + (11n + 14) a(n - 1) + (-36n + 20) a(n - 2) - 6 a(n - 5)$$

$$\left( \frac{1}{2} - \frac{1}{2} z - \frac{1}{2} (1 - 6z + z^2)^{\frac{1}{2}} \right)^4$$

1, 8, 48, 264, 1408, 7432, 39152, 206600, 1093760, 5813000, 31019568,  
 166188552, 893763840, 4823997960, 26124870640, 141926904328,  
 773293020928, 4224773978632

**Total preorders**

Réf. MSH 53 20 76.

**HIS2** A6327      Approximants de Padé      Conjecture**HIS1**              Fraction rationnelle

$$\frac{2 + z}{(1 - z) (1 - z - z^2)}$$

2, 5, 10, 18, 31, 52, 86

**From the enumeration of corners**

Réf. CRO 6 82 65.

**HIS2** A6331      Approximants de Padé**HIS1**              Fraction rationnelle

$$\frac{2 (1 + z)}{(z - 1)^4}$$

2, 10, 28, 60, 110, 182, 280, 408, 570, 770, 1012, 1300, 1638, 2030, 2480,  
2992, 3570, 4218, 4940, 5740, 6622, 7590, 8648, 9800, 11050, 12402, 13860,  
15428, 17110, 18910, 20832

### From the enumeration of corners

Réf. CRO 6 82 65.

HIS2 A6332 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2(1+z)(1+6z+z^2)}{(1-z)^7}$$

2, 28, 168, 660, 2002, 5096, 11424, 23256, 43890, 77924, 131560, 212940,  
332514, 503440, 742016, 1068144, 1505826, 2083692, 2835560, 3801028,  
5026098, 6563832, 8475040

### From the enumeration of corners

Réf. CRO 6 82 65.

HIS2 A6333 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^5 + 20z^4 + 75z^3 + 75z^2 + 20z + 1}{(z-1)^{10}}$$

2, 60, 660, 4290, 20020, 74256, 232560, 639540, 1586310, 3617900,  
7696260, 15438150, 29451240, 53796160, 94607040, 160908264,  
265670730, 427156860, 670609940, 1030350090



### From the enumeration of corners

Réf. CRO 6 82 65.

**HIS2** A6334 hypergéométrique  
**HIS1** Fraction rationnelle

$$\frac{(z^7 + 42z^6 + 364z^5 + 1001z^4 + 1001z^3 + 364z^2 + 42z + 1)z}{(1-z)^{13}}$$

2, 110, 2002, 20020, 136136, 705432, 2984520, 10786908, 34370050,  
 98768670, 260390130, 638110200, 1468635168, 3200871520, 6650874912,  
 13248113736, 25415833170

Réf. CRO 6 99 65.

**HIS2** A6335 P-réurrences Suite P-récurrente  
**HIS1** algébrique 3è degré

$$- (2n - 1) n a(n) =$$

$$- 6 (3n - 4) (3n - 5) a(n - 1)$$

1, 2, 16, 192, 2816, 46592, 835584, 15876096, 315031552, 6466437120,  
 136383037440, 2941129850880, 64614360416256, 1442028424527872,  
 32619677465182208

### Coloring a circuit with 4 colors

Réf. TAMS 60 355 46. BE74.

**HIS2** A6342      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{2z - 1}{(z - 1)(1 - 3z)(1 + z)}$$

1, 1, 4, 10, 31, 91, 274, 820, 2461

### Related to series-parallel networks

Réf. AAP 4 127 72.

**HIS2** A6351      Inverse fonctionnel

**HIS1**              exponentielle      f.g. exponentielle

S(z) est l'inverse fonctionnel de  $2 \ln(1 + z) - z$

$$-1 - 2 W(-1/2 \exp(-1/2 + 1/2 z))$$

1, 2, 8, 52, 472, 5504, 78416, 1320064, 25637824, 564275648, 13879795712,  
377332365568, 11234698041088, 363581406419456, 12707452084972544,  
477027941930515456

**Distributive lattices**

Réf. MSH 53 19 76. MSG 121 121 76.

HIS2 A6356 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 - z - 1}{z^3 - z^2 - 2z + 1}$$

1, 3, 6, 14, 31, 70, 157, 353, 793, 1782, 4004

**Distributive lattices**

Réf. MSH 53 19 76. MSG 121 121 76.

HIS2 A6357 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - z^2 + 2z - z^3}{(1 + z)(z^3 - 3z + 1)}$$

1, 4, 10, 30, 85, 246, 707, 2037, 5864, 16886, 48620

**Distributive lattices**

Réf. MSH 53 19 76. MSG 121 121 76.

HIS2 A6358 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(z - 1) (z^3 - 3z - 1)}{1 - 3z - 3z^2 + 4z^3 + z^4 - z^5}$$

1, 5, 15, 55, 190, 671, 2353, 8272, 29056, 102091, 358671

Réf. UPNT E17. jhc.

HIS2 A6368 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 3z + z^2 + 3z^3 + z^4}{(1 + z)^2 (z - 1)^2 (1 + z)^2}$$

1, 3, 2, 6, 4, 9, 5, 12, 7, 15, 8, 18, 10, 21, 11, 24, 13, 27, 14, 30, 16, 33, 17, 36,  
19, 39, 20, 42, 22, 45, 23, 48, 25, 51, 26, 54, 28, 57, 29, 60, 31, 63, 32, 66, 34,  
69, 35, 72, 37, 75, 38, 78, 40

Réf. UPNT E17. jhc.

HIS2 A6369 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 + z^2)(z^2 + 3z + 1)}{(z - 1)^2(z^2 + z + 1)^2}$$

1, 3, 2, 5, 7, 4, 9, 11, 6, 13, 15, 8, 17, 19, 10, 21, 23, 12, 25, 27, 14, 29, 31, 16, 33, 35, 18, 37, 39, 20, 41, 43, 22, 45, 47, 24, 49, 51, 26, 53, 55, 28, 57, 59, 30, 61, 63, 32, 65, 67, 34, 69, 71

### Image of n under the 3x+1 map

Réf. UPNT 16.

HIS2 A6370 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{4 + z + 2z^2}{(z - 1)^2(1 + z)^2}$$

4, 1, 10, 2, 16, 3, 22, 4, 28, 5, 34, 6, 40, 7, 46, 8, 52, 9, 58, 10, 64, 11, 70, 12, 76, 13, 82, 14, 88, 15, 94, 16, 100, 17, 106, 18, 112, 19, 118, 20, 124, 21, 130, 22, 136, 23, 142, 24, 148, 25, 154

### Rooted nonseparable maps on the torus

Réf. JCT B18 241 75.

HIS2 A6408 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^2 + 11z + 4}{(z - 1)^7}$$

4, 39, 190, 651, 1792, 4242, 8988, 17490, 31812

### Non-separable planar tree-rooted maps

Réf. JCT B18 243 75.

HIS2 A6411 Dérivée logarithmique

HIS1 Fraction rationnelle

$$\frac{2z + 3}{(1 - z)^6}$$

3, 20, 75, 210, 490, 1008, 1890, 3300, 5445, 8580, 13013

### Non-separable toroidal tree-rooted maps

Réf. JCT B18 243 75.

HIS2 A6414 Dérivée logarithmique

HIS1 Fraction rationnelle

$$\frac{z^2 + 3z + 1}{(z - 1)^6}$$

1, 9, 40, 125, 315, 686, 1344, 2430, 4125, 6655, 10296

### Rooted planar maps

Réf. JCT B18 248 75.

HIS2 A6416 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 4z - 6z^2 + 2z^3}{(z - 1)^4}$$

1, 8, 20, 38, 63, 96, 138, 190, 253, 328, 416, 518, 635

### Rooted planar maps

Réf. JCT B18 248 75.

HIS2 A6417 Dérivée logarithmique

HIS1 exponentielle

$$\exp(z) (360 + 6840 z + 16560 z^2 + 8100 z^3 + 1395 z^4 + 93 z^5 + 2 z^6)$$

---

360

1, 20, 131, 469, 1262, 2862, 5780, 10725, 18647, 30784, 48713, 74405

### Rooted planar maps

Réf. JCT B18 249 75.

HIS2 A6419 P-réurrences Suite P-récurrente

HIS1

$$\begin{aligned} (n + 2) a(n) = & \\ & (9n + 10) a(n - 1) \\ & - (24n + 2) a(n - 2) \\ & + (16n - 24) a(n - 3) \end{aligned}$$

1, 7, 37, 176, 794, 3473, 14893, 63004, 263950, 1097790, 4540386,  
18696432, 76717268



### Tree-rooted planar maps

Réf. JCT B18 256 75.

HIS2 A6428 Approximants de Padé

HIS1 exponentielle

$$\exp(z) \left( 3 + 33z + 33z^2 + 10z^3 + \frac{9}{8}z^4 + \frac{1}{24}z^5 \right)$$

0, 3, 36, 135, 360, 798, 1568, 2826, 4770, 7645, 11748, 17433

### Tree-rooted planar maps

Réf. JCT B18 257 75.

HIS2 A6431 Hypergéométrique Suite P-récurrente

HIS1 algébrique

$$\frac{6z^2 - 6z + 1 - (1 - 4z)^{3/2}}{-2(1 - 4z)^{3/2}z^2}$$

0, 2, 15, 84, 420, 1980, 9009, 40040, 175032, 755820, 3233230, 13728792, 57946200

**n divises n**

Réf. AMM 82 854 75. jos.

HIS2 A6446 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z + z^2 - z^3}{(z^2 + z + 1)(z^2 - 1)^3}$$

1, 2, 3, 4, 6, 8, 9, 12, 15, 16, 20, 24, 25, 30, 35, 36, 42, 48, 49, 56, 63, 64, 72, 80, 81, 90, 99, 100, 110, 120, 121, 132, 143, 144, 156, 168, 169, 182, 195, 196, 210, 224, 225, 240, 255, 256

**Solution to a diophantine equation**

Réf. TR July 1973 p. 74. jos.

HIS2 A6451 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z(2 + 3z - 2z^2 - z^3)}{(z - 1)(1 - 2z - z^2)(z^2 - 2z - 1)}$$

0, 2, 5, 15, 32, 90, 189, 527, 1104, 3074, 6437, 17919, 37520, 104442, 218685, 608735, 1274592, 3547970, 7428869, 20679087, 43298624, 120526554, 252362877, 702480239

### Solution to a diophantine equation

Réf. TR July 1973 p. 74. jos.

HIS2 A6452 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 - z) (z^2 + 3z + 1)}{(1 - 2z - z^2) (z^2 - 2z - 1)}$$

1, 2, 4, 11, 23, 64, 134, 373, 781, 2174, 4552, 12671, 26531, 73852, 154634,  
430441, 901273, 2508794, 5253004, 14622323, 30616751, 85225144,  
178447502, 496728541, 1040068261

### Solution to a diophantine equation

Réf. TR July 1973 p. 74. jos.

HIS2 A6454 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z (1 + 4z + z^2)}{3 (1 - z) (z^2 - 6z + 1) (1 + 6z + z^2)}$$

0, 3, 15, 120, 528, 4095, 17955, 139128, 609960, 4726275, 20720703,  
160554240, 703893960, 5454117903, 23911673955, 185279454480,  
812293020528, 6294047334435

**Number of elements in  $Z[i]$  whose "smallest algorithm" is  $\leq n$**

Réf. JALG 19 290 71. hwl.

HIS2 A6457 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z + 2z^3}{(2z - 1)(1 - 2z^2)(1 - z)^2}$$

1, 5, 17, 49, 125, 297, 669, 1457, 3093, 6457, 13309, 27201, 55237, 111689,  
225101, 452689, 908885, 1822809, 3652701, 7315553, 14645349, 29311081,  
58650733, 117342321, 234741877

**Number of elements in  $Z[ ]$  whose "smallest algorithm" is  $\leq n$**

Réf. JALG 19 290 71. hwl.

HIS2 A6458 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 2z + z^2 + 2z^4 + 6z^5}{(-1 + 3z)(2z^3 + 2z^2 - 1)(z - 1)^2}$$

1, 7, 31, 115, 391, 1267, 3979, 12271, 37423, 113371, 342091, 1029799,  
3095671, 9298147, 27914179, 83777503, 251394415, 754292827,  
2263072411, 6789560412

### Rooted planar maps

Réf. JCT B18 249 75.

HIS2 A6468 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^3 - 4z^2 + 2z + 5}{(z - 1)^7}$$

5, 37, 150, 449, 1113, 2422, 4788, 8790, 15213, 25091, 39754, 60879

### Rooted planar maps

Réf. JCT B18 251 75.

HIS2 A6469 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{3z^2 - 9z - 10}{(z - 1)^7}$$

10, 79, 340, 1071, 2772, 6258, 12768, 24090, 42702, 71929

### Rooted planar maps

Réf. JCT B18 257 75.

**HIS2** A6471 Approximants de Padé

**HIS1** Fraction rationnelle

$$\frac{4z^3 + 35z^2 + 34z + 5}{(z-1)^{10}}$$

5, 84, 650, 3324, 13020, 42240, 118998, 300300, 693693, 1490060, 3011580

Réf. JSCS 12 122 81.

**HIS2** A6472 hypergéométrique f.g. exponentielle double

**HIS1** Fraction rationnelle

$2a(n) = (n-1)n a(n-1)$

$$\frac{4}{(z-2)^2}$$

1, 1, 3, 18, 180, 2700, 56700, 1587600, 57153600, 2571912000,  
141455160000, 9336040560000, 728211163680000, 66267215894880000,  
6958057668962400000

Réf. BIT 13 93 73.

HIS2 A6478 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1}{(z - 1) (1 - z - z^2)}$$

1, 3, 8, 18, 38, 76, 147, 277, 512, 932, 1676, 2984, 5269, 9239, 16104, 27926, 48210, 82900, 142055, 242665, 413376, 702408, 1190808, 2014608, 3401833, 5734251, 9650312

### From variance of Fibonacci search

Réf. BIT 13 93 73.

HIS2 A6479 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^3 (z^2 + z + 1)}{(1 - z) (1 - z - z^3)}$$

0, 0, 0, 1, 5, 18, 52, 134, 318, 713, 1531, 3180, 6432, 12732, 24756, 47417, 89665, 167694, 310628, 570562, 1040226, 1883953, 3391799, 6073848, 10824096, 19204536, 33936456

Réf. dsk.

HIS2 A6483

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 - 6z^2}{(z - 1)(4z^2 + 2z - 1)}$$

1, 3, 5, 17, 49, 161, 513, 1665, 5377, 17409, 56321, 182273, 589825,  
 1908737, 6176769, 19988481, 64684033, 209321985, 677380097,  
 2192048129, 7093616641, 22955425793

Réf. dsk.

HIS2 A6484

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 - 2z + 5z^2}{(1 - z)^5}$$

1, 3, 10, 30, 75, 161, 308, 540, 885, 1375, 2046, 2938, 4095, 5565, 7400,  
 9656, 12393, 15675, 19570, 24150, 29491, 35673, 42780, 50900, 60125,  
 70551, 82278, 95410, 110055, 126325



**Generalized Lucas numbers**

Réf. FQ 15 252 77.

HIS2 A6490 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - 2z + 2z^2}{(1 - z - z^2)}$$

1, 0, 3, 4, 10, 18, 35, 64, 117, 210, 374, 660, 1157, 2016, 3495, 6032, 10370, 17766, 30343, 51680, 87801, 148830, 251758, 425064, 716425, 1205568, 2025675, 3399004, 5696122

**Generalized Lucas numbers**

Réf. FQ 15 252 77.

HIS2 A6491 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{(1 - 2z + 2z^2)(z - 1)}{(1 - z - z^2)}$$

1, 0, 4, 5, 15, 28, 60, 117, 230, 440, 834, 1560, 2891, 5310, 9680, 17527, 31545, 56468, 100590, 178395, 315106, 554530, 972564, 1700400, 2964325, 5153868, 8938300, 15465497

### Generalized Lucas numbers

Réf. FQ 15 252 77.

**HIS2** A6492      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{(1 - 2z + 2z^2)(z - 1)^2}{(1 - z - z^2)^4}$$

1, 0, 5, 6, 21, 40, 93, 190, 396, 796, 1586, 3108, 6025, 11552, 21947, 41346, 77311, 143580, 265013, 486398, 888122, 1613944, 2920100, 5261880, 9445905, 16897328, 30127665

### Generalized Lucas numbers

Réf. FQ 15 252 77.

**HIS2** A6493      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{(1 - 2z + 2z^2)(z - 1)^3}{(1 - z - z^2)^5}$$

1, 0, 6, 7, 28, 54, 135, 286, 627, 1313, 2730, 5565, 11212, 22304, 43911, 85614, 165490, 317373, 604296, 1143054, 2149074, 4017950, 7473180, 13832910, 25490115, 46774448

Réf. FQ 15 292 77.

HIS2 A6497 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{2 - 3z}{1 - 3z - z^2}$$

2, 3, 11, 36, 119, 393, 1298, 4287, 14159, 46764, 154451, 510117, 1684802,  
5564523, 18378371, 60699636, 200477279, 662131473, 2186871698,  
7222746567, 23855111399

### Restricted combinations

Réf. FQ 16 113 78.

HIS2 A6498 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + z + 2z^2 + z^3}{(1 - z - z^2)(1 + z^2)}$$

1, 2, 4, 6, 9, 15, 25, 40, 64, 104, 169, 273, 441, 714, 1156, 1870, 3025, 4895,  
7921, 12816, 20736, 33552, 54289, 87841, 142129, 229970, 372100, 602070,  
974169, 1576239, 2550409

### Restricted circular combinations

Réf. FQ 16 115 78.

HIS2 A6499 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 2z + 6z^2 + 2z^3}{(1 - z - z^2)(1 + z^2)}$$

1, 3, 9, 12, 16, 28, 49, 77, 121, 198, 324, 522, 841, 1363, 2209, 3572, 5776,  
9348, 15129, 24477, 39601, 64078, 103684, 167762, 271441, 439203,  
710649, 1149852, 1860496

### Restricted combinations

Réf. FQ 16 116 78.

HIS2 A6500 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z^7 + 2z^6 + z^5 - z^4 - 3z^3 - z^2 - z - 1}{(z^6 - z^3 - 1)(1 - z - z^2)}$$

1, 2, 4, 8, 12, 18, 27, 45, 75, 125, 200, 320, 512, 832, 1352, 2197, 3549, 5733,  
9261, 14994, 24276, 39304, 63580, 102850, 166375, 269225, 435655,  
704969, 1140624, 1845504, 2985984

Réf. FQ 16 116 78.

**HIS2** A6501      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{1 + z^2}{(z^2 + z + 1)^2 (z - 1)^4}$$

1, 2, 4, 8, 12, 18, 27, 36, 48, 64, 80, 100, 125, 150, 180, 216, 252, 294, 343, 392, 448, 512, 576, 648, 729, 810, 900, 1000, 1100, 1210, 1331, 1452, 1584, 1728, 1872, 2028, 2197, 2366

Réf. FQ 14 43 76.

**HIS2** A6503      Approximants de Padé

**HIS1**              Fraction rationnelle

$$\frac{2z - 3}{(1 - z)^4}$$

3, 10, 22, 40, 65, 98, 140, 192, 255, 330, 418, 520, 637, 770, 920, 1088, 1275, 1482, 1710, 1960, 2233, 2530, 2852, 3200, 3575

Réf. FQ 14 43 76.

HIS2 A6504 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{5 - 5z + z^2}{(1 - z)^5}$$

5, 20, 51, 105, 190, 315, 490, 726, 1035, 1430, 1925, 2535, 3276, 4165, 5220, 6460, 7905, 9576, 11495, 13685, 16170, 18975, 22126, 25650, 29575

Réf. FQ 14 69 76.

HIS2 A6505 équations différentielles Formule de B. Salvy

HIS1 exponentielle

$$\exp(\exp(z) - z - 1/2 z^2 - 1)$$

1, 0, 0, 1, 1, 1, 11, 36, 92, 491, 2557, 11353, 60105, 362506, 2169246, 13580815, 91927435, 650078097, 4762023647, 36508923530, 292117087090, 2424048335917, 20847410586719

Réf. HO73 113.

HIS2 A6516 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1}{(1 - 2z)(1 - 4z)}$$

1, 6, 28, 120, 496, 2016, 8128, 32640, 130816, 523776, 2096128, 8386560, 33550336, 134209536, 536854528, 2147450880, 8589869056, 34359607296, 137438691328, 549755289600

Réf. HO73 102.

HIS2 A6522 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 - z + z^2}{(z - 1)^5}$$

1, 4, 11, 25, 50, 91, 154, 246, 375, 550, 781, 1079, 1456, 1925, 2500, 3196, 4029, 5016, 6175, 7525, 9086, 10879, 12926, 15250, 17875, 20826, 24129, 27811, 31900, 36425, 41416

Réf. GA66 246.

HIS2 A6527 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z (1 + z^2)}{(z - 1)^4}$$

0, 1, 4, 11, 24, 45, 76, 119, 176, 249, 340, 451, 584, 741, 924, 1135, 1376, 1649, 1956, 2299, 2680, 3101, 3564, 4071, 4624, 5225, 5876, 6579, 7336, 8149, 9020, 9951, 10944, 12001

Réf. GA66 246.

HIS2 A6528 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z (1 + z + 4z^2)}{(1 - z)^5}$$

0, 1, 6, 24, 70, 165, 336, 616, 1044, 1665, 2530, 3696, 5226, 7189, 9660, 12720, 16456, 20961, 26334, 32680, 40110, 48741, 58696, 70104, 83100, 97825, 114426, 133056, 153874



**Cubes with sides of n colors**

Réf. GA66 246.

HIS2 A6529 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{z (1 + 5z + 17z^2 + 77z^3)}{(1 - z)^5}$$

0, 1, 10, 57, 272, 885, 2226, 4725, 8912, 15417, 24970, 38401, 56640, 80717, 111762, 151005, 199776, 259505, 331722, 418057, 520240, 640101, 779570, 940677, 1125552, 1336425

**C(n , 3) C(n - 1, 3) / 4**

Réf.

HIS2 A6542 Approximants de Padé

HIS1 Fraction rationnelle

$$\frac{1 + 3z + z^2}{(1 - z)^7}$$

1, 10, 50, 175, 490, 1176, 2520, 4950, 9075, 15730, 26026, 41405, 63700, 95200, 138720, 197676, 276165, 379050, 512050, 681835, 896126, 1163800, 1495000, 1901250, 2395575

**n-coloring a cube**

Réf. C1 254.

HIS2 A6550

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + 3z + 8z^2 + 10z^3 + 14z^4 - 6z^5}{(1 - z)^7}$$

1, 10, 57, 234, 770, 2136, 5180, 11292, 22599, 42190, 74371, 124950,  
 201552, 313964, 474510, 698456, 1004445, 1414962, 1956829, 2661730,  
 3566766, 4715040, 6156272, 7947444

**Icosahedral numbers**

Réf.

HIS2 A6564

Approximants de Padé

HIS1

Fraction rationnelle

$$\frac{1 + 8z + 6z^2}{(z - 1)^4}$$

1, 12, 48, 124, 255, 456, 742, 1128, 1629, 2260, 3036, 3972, 5083, 6384,  
 7890, 9616, 11577, 13788, 16264, 19020, 22071, 25432, 29118, 33144,  
 37525, 42276, 47412, 52948, 58899

### Colored hexagons

Réf.

**HIS2** A6565

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{1 + 7z + 53z^2 + 49z^3 + 10z^4}{(1 - z)^7}$$

1, 14, 130, 700, 2635, 7826, 19684, 43800, 88725, 166870, 295526, 498004, 804895, 1255450, 1899080, 2796976, 4023849, 5669790, 7842250, 10668140, 14296051, 18898594

### Dodecahedral numbers

Réf.

**HIS2** A6566

Approximants de Padé

**HIS1**

Fraction rationnelle

$$\frac{1 + 16z + 10z^2}{(1 - z)^4}$$

1, 20, 84, 220, 455, 816, 1330, 2024, 2925, 4060, 5456, 7140, 9139, 11480, 14190, 17296, 20825, 24804, 29260, 34220, 39711, 45760, 52394, 59640, 67525, 76076, 85320, 95284

Réf. mlb.

**HIS2** A6578 Approximants de Padé

**HIS1** Fraction rationnelle

$$a(n) = \max(n, n-k), k=1 \dots n-1$$

$$\frac{1 + 2z}{(1+z)(1-z)^3}$$

1, 4, 8, 14, 21, 30, 40, 52, 65, 80, 96, 114, 133, 154, 176, 200, 225, 252, 280, 310, 341, 374, 408, 444, 481, 520, 560, 602, 645, 690, 736, 784, 833, 884, 936, 990, 1045, 1102, 1160

### Generalized Fibonacci numbers

Réf. LNM 622 186 77.

**HIS2** A6603 LLL Suite P-récurrente

**HIS1** algébrique

$$n a(n) = -n a(n-5) + (7n-9) a(n-1) + (-8n+12) a(n-2) \\ + (6n-12) a(n-3) + (5n-6) a(n-4) + 3 a(n-5)$$

$$\frac{1 - z - 2z^2 - (1 - 6z + z^2)^{1/2}}{2z^2 - z^3 + z^4}$$

1, 2, 7, 26, 107, 468, 2141, 10124, 49101, 242934, 1221427, 6222838, 32056215, 166690696, 873798681, 4612654808, 24499322137, 130830894666, 702037771647, 3783431872018

### Generalized Fibonacci numbers

Réf. LNM 622 186 77.

HIS2 A6604

LLL

Suite P-récurrente

HIS1

algébrique

$$n a(n) = (-1/2 n + 3/2) a(n - 5) + (7/2 n - 6) a(n - 4) + (13/2 n - 9) a(n - 1) + (-7/2 n + 15/2) a(n - 2) + (-3 n + 3) a(n - 3)$$

$$\frac{1 + z - 2z^2 - (1 - 6z + z^2)^{1/2}}{2z^2 - z^3 + z^4}$$

1, 1, 4, 13, 53, 228, 1037, 4885, 23640, 116793, 586633, 2986616, 15377097, 79927913, 418852716, 2210503285, 11738292397, 62673984492, 336260313765

### Modes of connections of 2n points

Réf. LNM 686 326 78.

HIS2 A6605

LLL

Suite P-récurrente

HIS1

algébrique

P-récurrance du 3è degré

$S(z)$  satisfait à

$$\frac{1 - S(z) + S(z)^2 z + S(z)^4 z^2}{z^2}$$

1, 1, 3, 11, 46, 207, 979, 4797, 24138, 123998, 647615, 3428493, 18356714, 99229015, 540807165, 2968468275, 16395456762, 91053897066, 508151297602, 2848290555562

**From generalized Catalan numbers**

Réf. LNM 952 279 82.

HIS2 A6629

LLL

La F.G. est algébrique du 3<sup>e</sup> degré et

HIS1

algébrique

prend trop de place.

$${}_3F_2([2, 5/3, 4/3], [3, 5/2], 27 z/4)$$

1, 4, 18, 88, 455, 2448, 13566, 76912, 444015, 2601300, 15426840,  
 92431584, 558685348, 3402497504, 20858916870, 128618832864,  
 797168807855, 4963511449260, 31032552351570

**From generalized Catalan numbers**

Réf. LNM 952 279 82.

HIS2 A6630

Hypergéométrique

La F.G. est algébrique du 3<sup>e</sup> degré et

HIS1

algébrique

prend trop de place.

$${}_3F_2([2, 8/3, 7/3], [4, 7/2], 27 z/4)$$

1, 6, 33, 182, 1020, 5814, 33649, 197340, 1170585, 7012200, 42364476,  
 257854776, 1579730984, 9734161206, 60290077905, 375138262520,  
 2343880406595, 14699630061270

### From generalized Catalan numbers

Réf. LNM 952 279 82.

**HIS2** A6631

LLL

Suite P-récurrente

**HIS1**

algébrique

La F.G. est algébrique du 3<sup>e</sup> degré et prend trop de place.

$${}_3F_2\left(\left[3, 8/3, 10/3\right], \left[5, 9/2\right], 27z/4\right)$$

1, 8, 52, 320, 1938, 11704, 70840, 430560, 2629575, 16138848, 99522896,  
616480384, 3834669566, 23944995480, 150055305008, 943448717120,  
5949850262895, 37628321318280

### From generalized Catalan numbers

Réf. LNM 952 280 82.

**HIS2** A6632

Hypergéométrique

Suite P-récurrente

**HIS1**

algébrique

Inverse de A2293

1

$$1 + z {}_4F_3\left(\left[1, 7/4, 5/4, 3/2\right], \left[2, 5/3, 7/3\right], 256z/27\right)$$

1, 3, 15, 91, 612, 4389, 32890, 254475, 2017356, 16301164, 133767543,  
1111731933, 9338434700, 79155435870, 676196049060, 5815796869995,  
50318860986108

**From generalized Catalan numbers**

Réf. LNM 952 280 82.

**HIS2** A6633      Hypergéométrique      Suite P-récurrente  
**HIS1**                      algébrique

$${}_4F_3 \left( \left[ 2, \frac{9}{4}, \frac{3}{2}, \frac{7}{4} \right], \right. \\ \left. \left[ 3, \frac{8}{3}, \frac{7}{3} \right], 256 z / 27 \right)$$

1, 6, 39, 272, 1995, 15180, 118755, 949344, 7721604, 63698830, 531697881,  
 4482448656, 38111876530, 326439471960, 2814095259675,  
 24397023508416, 212579132600076

**From generalized Catalan numbers**

Réf. LNM 952 280 82.

**HIS2** A6634      Hypergéométrique      Suite P-récurrente  
**HIS1**                      algébrique

$${}_4F_3 \left( \left[ 3, \frac{9}{4}, \frac{5}{2}, \frac{11}{4} \right], \right. \\ \left. \left[ 4, \frac{10}{3}, \frac{11}{3} \right], 256 z / 27 \right)$$

1, 9, 72, 570, 4554, 36855, 302064, 2504304, 20974005, 177232627,  
 1509395976, 12943656180, 111676661460, 968786892675, 8445123522144,  
 73940567860896,



### From generalized Catalan numbers

Réf. LNM 952 280 82.

**HIS2** A6635      Hypergéométrique      Suite P-récurrente  
**HIS1**                      algébrique

$${}_4F_3 \left( \left[ 3, \frac{7}{2}, \frac{15}{4}, \frac{13}{4} \right], \right. \\ \left. \left[ 5, \frac{14}{3}, \frac{13}{3} \right], 256 z / 27 \right)$$

1, 12, 114, 1012, 8775, 75516, 649264, 5593068, 48336171, 419276660,  
 3650774820, 31907617560, 279871768995, 2463161027292,  
 21747225841440, 19257567355

### Closed meanders

Réf. SFCA 292.

**HIS2** A6659      Hypergéométrique      Suite P-récurrente  
**HIS1**                      algébrique

32

$$\frac{1}{(1 - 4z)^{1/2} (1 + (1 - 4z)^{1/2})^4}$$

2, 12, 56, 240, 990, 4004

### Planted binary phylogenetic trees with n labels

Réf. LNM 884 196 81.

**HIS2** A6677 Inverse fonctionnel erreurs dans la suite

**HIS1** exponentielle (algébrique)

$$1 - (3 - 2 \exp(z))^{1/2}$$

1, 2, 7, 41, 346, 3797, 51157, 816356, 15050581, 34459425

### Planted binary phylogenetic trees with n labels

Réf. LNM 884 196 81.

**HIS2** A6678 Inverse fonctionnel

**HIS1** algébrique

$$1 - (1 - 2z - 2z^2)^{1/2}$$

---


$$1 + z$$

1, 1, 6, 39, 390, 4815, 73080, 1304415, 26847450, 625528575

### Planted binary phylogenetic trees with n labels

Réf. LNM 884 196 81.

HIS2 A6679 Inverse fonctionnel

HIS1 exponentielle (algébrique)

$$\frac{1}{\exp(z)} + \frac{(1 + 2 \exp(z) - 2 \exp(z)^{1/2})}{\exp(z)}$$

1, 2, 10, 83, 946, 13772, 244315, 5113208, 123342166, 3369568817

Réf. R1 38. sls.

HIS2 A6790 Recoupements

HIS1 exponentielle

$$\frac{\exp(z)}{2 - \exp(z)}$$

1, 2, 6, 26, 150, 1082, 9366, 94586, 1091670, 14174522, 204495126,  
3245265146, 56183135190, 1053716696762, 21282685940886,  
460566381955706, 10631309363962710

### Extreme points of set of $n \times n$ symmetric doubly-stochastic matrices

Réf. JCT 8 422 70. EJC 1 180 80.

**HIS2** A6847 Dérivée logarithmique Suite P-récurrente

**HIS1** exponentielle (algébrique)

$$a(n) = n^3 a(n-1) + (4n^3 - 4n^2 + n) a(n-2) + (-3n^3 + 5/2n^2 - 1/2n) a(n-3) + (24n^3 - 26n^2 + 9n - 1) a(n-4)$$

$$\frac{(z+1)^{1/4} \exp(1/2 z (z+1))}{(z-1)^{1/4}}$$

1, 1, 2, 5, 14, 58, 238, 1516, 9020, 79892, 635984, 7127764, 70757968, 949723600, 11260506056, 175400319992, 2416123951952, 42776273847184, 671238787733920

### Extreme points of set of $n \times n$ symmetric doubly-substochastic matrices

Réf. EJC 1 180 80.

**HIS2** A6848 Dérivée logarithmique

**HIS1** exponentielle (algébrique)

$$\frac{(z+1)^{1/4} \exp\left(\frac{z^3 - z^2 + 2z - 3}{2(z-1)(z+1)}\right)}{(z-1)^{1/4}}$$

1, 2, 5, 18, 75, 414, 2643, 20550, 180057, 1803330, 19925541, 242749602, 3218286195, 46082917278, 710817377715, 11689297807734, 205359276208113, 3812653265319810