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# List of mathematical constants

A mathematical constant is a key number whose value is fixed by an unambiguous definition, often referred to by a symbol (e.g., an alphabet letter), or by mathematicians' names to facilitate using it across multiple mathematical problems.<sup>[1][2]</sup> For example, the constant  $\pi$  may be defined as the ratio of the length of a circle's circumference to its diameter. The following list includes a decimal expansion and set containing each number, ordered by year of discovery.

Explanations of the symbols in the right hand column can be found by clicking on them.

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## Antiquity

Name	Symbol	Decimal Expansion	Formula	Year	Set
<u>One</u>	1	1	None <sup>[nb 1]</sup>	Prehistory	<u>N</u>
<u>Two</u>	2	2	$1 + 1$	Prehistory	<u>N</u>
<u>One half</u>	1/2	0.5	$1/2$	Prehistory	<u>Q</u>
<u>Pi</u>	$\pi$	3.14159 26535 89793 23846 [Mw 1][OEIS 1]	Ratio of a circle's circumference to its diameter.	1900 to 1600 BCE <sup>[3]</sup>	<u>T</u>
<u>Square root of 2,</u> <u>Pythagoras constant</u> , <sup>[4]</sup>	$\sqrt{2}$	1.41421 35623 73095 04880 [Mw 2][OEIS 2]	Positive root of $x^2 = 2$	1800 to 1600 BCE <sup>[5]</sup>	<u>A</u>
<u>Square root of 3,</u> <u>Theodorus' constant</u> , <sup>[6]</sup>	$\sqrt{3}$	1.73205 08075 68877 29352 [Mw 3][OEIS 3]	Positive root of $x^2 = 3$	465 to 398 BCE	<u>A</u>
<u>Square root of 5</u> , <sup>[7]</sup>	$\sqrt{5}$	2.23606 79774 99789 69640 [OEIS 4]	Positive root of $x^2 = 5$		<u>A</u>
<u>Phi, Golden ratio</u> , <sup>[1][8]</sup>	$\varphi$	1.61803 39887 49894 84820 [Mw 4][OEIS 5]	Positive root of $x^2 - x - 1 = 0$	~300 BCE	<u>A</u>
<u>Zero</u>	0	0	The additive identity: $x + 0 = x$	300-100 century BCE <sup>[9]</sup>	<u>Z</u>
<u>Negative one</u>	-1	-1	$1 - 2$	300-200 BCE	<u>Z</u>
<u>Cube root of 2 (Delian Constant)</u>	$\sqrt[3]{2}$	1.25992 10498 94873 16476 [Mw 5][OEIS 6]	Real root of $x^3 = 2$	46 -120 CE [10]	<u>A</u>
<u>Cube root of 3</u>	$\sqrt[3]{3}$	1.44224 95703 07408 38232 [OEIS 7]	Real root of $x^3 = 3$		<u>A</u>

## Medieval and Early Modern

Name	Symbol	Decimal Expansion	Formula	Year	Set
Imaginary unit [1][11]	$i$	$0 + 1i$	Either of the two roots of $x^2 = -1$ [nb 2]	1501 to 1576	$\mathbb{C}$
Wallis Constant	$W$	2.09455 14815 42326 59148 [Mw 6][OEIS 8]	$\sqrt[3]{\frac{45 - \sqrt{1929}}{18}} + \sqrt[3]{\frac{45 + \sqrt{1929}}{18}}$	1616 to 1703	$\mathbb{A}$
Euler's number <sup>[1][12]</sup>	$e$	2.71828 18284 59045 23536 [Mw 7][OEIS 9]	$\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n$ [nb 3]	1618 <sup>[13]</sup>	$\mathbb{T}$
Natural logarithm of 2 <sup>[14]</sup>	$\ln 2$	0.69314 71805 59945 30941 [Mw 8][OEIS 10]	$\sum_{n=1}^{\infty} \frac{1}{n 2^n} = \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} = \frac{1}{1} - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \dots$	1619, <sup>[15]</sup> 1668 <sup>[16]</sup>	$\mathbb{T}$
Sophomore's dream <sub>1</sub> J.Bernoulli <sup>[17]</sup>	$I_1$	0.78343 05107 12134 40705 [OEIS 11]	$\int_0^1 x^x dx = \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n^n} = \frac{1}{1^1} - \frac{1}{2^2} + \frac{1}{3^3} - \dots$	1697	
Sophomore's dream <sub>2</sub> J.Bernoulli <sup>[18]</sup>	$I_2$	1.29128 59970 62663 54040 [Mw 9][OEIS 12]	$\int_0^1 \frac{1}{x^x} dx = \sum_{n=1}^{\infty} \frac{1}{n^n} = \frac{1}{1^1} + \frac{1}{2^2} + \frac{1}{3^3} + \frac{1}{4^4} + \dots$	1697	
Lemniscate constant <sup>[19]</sup>	$\varpi$	2.62205 75542 92119 81046 [Mw 10][OEIS 13]	$\pi G = 4\sqrt{\frac{2}{\pi}} \Gamma\left(\frac{5}{4}\right)^2 = \frac{1}{4}\sqrt{\frac{2}{\pi}} \Gamma\left(\frac{1}{4}\right)^2 = 4\sqrt{\frac{2}{\pi}} \left(\frac{1}{4}!\right)^2$	1718 to 1798	$\mathbb{T}$
Euler–Mascheroni constant <sup>[20]</sup>	$\gamma$	0.57721 56649 01532 86060 [Mw 11][OEIS 14]	$\sum_{n=1}^{\infty} \sum_{k=0}^{\infty} \frac{(-1)^k}{2^n + k} = \sum_{n=1}^{\infty} \left( \frac{1}{n} - \ln\left(1 + \frac{1}{n}\right) \right)$ $= \int_0^1 -\ln\left(\ln \frac{1}{x}\right) dx = -\Gamma'(1) = -\Psi(1)$	1735	$\mathbb{R} \setminus \mathbb{Q}$ ?
Erdős–Borwein constant <sup>[21]</sup>	$E_B$	1.60669 51524 15291 76378 [Mw 12][OEIS 15]	$\sum_{m=1}^{\infty} \sum_{n=1}^{\infty} \frac{1}{2^{mn}} = \sum_{n=1}^{\infty} \frac{1}{2^n - 1} = \frac{1}{1} + \frac{1}{3} + \frac{1}{7} + \frac{1}{15} + \dots$	1749 <sup>[22]</sup>	$\mathbb{R} \setminus \mathbb{Q}$
Laplace limit <sup>[23]</sup>	$\lambda$	0.66274 34193 49181 58097 [Mw 13][OEIS 16]	$\frac{x e^{\sqrt{x^2+1}}}{\sqrt{x^2+1}+1} = 1$	~1782	$\mathbb{T}$ ?
Gauss's constant <sup>[24]</sup>	$G$	0.83462 68416 74073 18628 [Mw 14][OEIS 17]	$\frac{1}{\text{agm}(1, \sqrt{2})} = \frac{4\sqrt{2} (\frac{1}{4}!)^2}{\pi^{3/2}} = \frac{2}{\pi} \int_0^1 \frac{dx}{\sqrt{1-x^4}}$ <p>where agm = Arithmetic–geometric mean</p>	1799 <sup>[25]</sup>	$\mathbb{T}$ ?

## 19th century

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Name	Symbol	Decimal Expansion	Formula	Year	Set
Ramanujan–Soldner constant <sup>[26][27]</sup>	$\mu$	1.45136 92348 83381 05028 [Mw 15][OEIS 18]	$\text{li}(x) = \int_0^x \frac{dt}{\ln t} = 0$ ; root of the logarithmic integral function.	1812[Mw 16]	
Hermite constant <sup>[28]</sup>	$\gamma_2$	1.15470 05383 79251 52901 [Mw 17]	$\frac{2}{\sqrt{3}} = \frac{1}{\cos(\frac{\pi}{6})}$	1822 to 1901	A
Liouville number <sup>[29]</sup>	$\ell_{Li}$	0.11000 10000 00000 00000 0001 [Mw 18][OEIS 19]	$\sum_{n=1}^{\infty} \frac{1}{10^{n!}} = \frac{1}{10^{1!}} + \frac{1}{10^{2!}} + \frac{1}{10^{3!}} + \frac{1}{10^{4!}} + \dots$	Before 1844	T
Hermite–Ramanujan constant <sup>[30]</sup>	$R$	262 53741 26407 68743 .99999 99999 99250 073 [Mw 19][OEIS 20]	$e^{\pi\sqrt{163}}$	1859	T
Catalan's constant <sup>[31][32][33]</sup>	$C$	0.91596 55941 77219 01505 [Mw 20][OEIS 21]	$\int_0^1 \int_0^1 \frac{1}{1+x^2y^2} dx dy = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)^2} = \frac{1}{1^2} - \frac{1}{3^2} + \dots$	1864	T?
Dottie number <sup>[34]</sup>	$d$	0.73908 51332 15160 64165 [Mw 21][OEIS 22]	$\lim_{x \rightarrow \infty} \cos^{[x]}(c) = \underbrace{\cos(\cos(\cos(\cos(\dots(\cos(c))))))}_x$	1865[Mw 21]	T
Meissel–Mertens constant <sup>[35]</sup>	$M$	0.26149 72128 47642 78375 [Mw 22][OEIS 23]	$\lim_{n \rightarrow \infty} \left( \sum_{p \leq n} \frac{1}{p} - \ln(\ln(n)) \right) = \gamma + \sum_p \left( \ln\left(1 - \frac{1}{p}\right) + \frac{1}{p} \right)$ γ: Euler constant, p: prime	1866 & 1873	T?
Weierstrass constant <sup>[36]</sup>	$\sigma(\frac{1}{2})$	0.47494 93799 87920 65033 [Mw 23][OEIS 24]	$\frac{e^{\frac{\pi}{8}} \sqrt{\pi}}{4 \cdot 2^{3/4} (\frac{1}{4}!)^2}$	1872 ?	
Hafner–Sarnak–McCurley constant (2) <sup>[37]</sup>	$\frac{1}{\zeta(2)}$	0.60792 71018 54026 62866 [Mw 24][OEIS 25]	$\frac{6}{\pi^2} = \prod_{n=0}^{\infty} \left(1 - \frac{1}{p_n^2}\right) = \left(1 - \frac{1}{2^2}\right) \left(1 - \frac{1}{3^2}\right) \left(1 - \frac{1}{5^2}\right) \dots$	1883[Mw 24]	T
Cahen's constant <sup>[38]</sup>	$\zeta_2$	0.64341 05462 88338 02618 [Mw 25][OEIS 26]	$\sum_{k=1}^{\infty} \frac{(-1)^k}{s_k - 1} = \frac{1}{1} - \frac{1}{2} + \frac{1}{6} - \frac{1}{42} + \frac{1}{1806} \pm \dots$ Where $s_k$ is the $k$ th term of <u>Sylvester's sequence</u> 2, 3, 7, 43, 1807, ... Defined as: $S_0 = 2$ , $S_k = 1 + \prod_{n=0}^{k-1} S_n$ for $k > 0$	1891	T
Universal parabolic constant <sup>[39]</sup>	$P_2$	2.29558 71493 92638 07403 [Mw 26][OEIS 27]	$\ln(1 + \sqrt{2}) + \sqrt{2} = \operatorname{arcsinh}(1) + \sqrt{2}$	Before 1891 <sup>[40]</sup>	T
Apéry's constant <sup>[41]</sup>	$\zeta(3)$	1.20205 69031 59594 28539 [Mw 27][OEIS 28]	$\sum_{n=1}^{\infty} \frac{1}{n^3} = \frac{1}{1^3} + \frac{1}{2^3} + \frac{1}{3^3} + \frac{1}{4^3} + \frac{1}{5^3} + \dots =$ $\frac{1}{2} \sum_{n=1}^{\infty} \frac{H_n}{n^2} = \frac{1}{2} \sum_{i=1}^{\infty} \sum_{j=1}^{\infty} \frac{1}{ij(i+j)} = \iiint_0^1 \frac{dx dy dz}{1 - xyz}$	1895 <sup>[42]</sup>	$\mathbb{R} \setminus \mathbb{Q}$ T?
Gelfond's constant <sup>[43]</sup>	$e^{\pi}$	23.14069 26327 79269 0057 [Mw 28][OEIS 29]	$(-1)^{-i} = i^{-2i} = \sum_{n=0}^{\infty} \frac{\pi^n}{n!} = \frac{\pi^1}{1} + \frac{\pi^2}{2!} + \frac{\pi^3}{3!} + \dots$	1900 <sup>[44]</sup>	T

**1900–1949**

Name	Symbol	Decimal Expansion	Formula	Year	Set
Favard constant [45]	$\frac{3}{4}\zeta(2)$	1.23370 05501 36169 82735 [Mw 29][OEIS 30]	$\frac{\pi^2}{8} = \sum_{n=0}^{\infty} \frac{1}{(2n-1)^2} = \frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \frac{1}{7^2} + \dots$	1902 to 1965	<u>T</u>
Golden angle [46]	$b$	2.39996 32297 28653 32223 [Mw 30][OEIS 31]	$(4 - 2\Phi)\pi = (3 - \sqrt{5})\pi = 137.5077640500378546 \dots^\circ$	1907	<u>T</u>
Sierpiński's constant [47]	$K$	2.58498 17595 79253 21706 [Mw 31][OEIS 32]	$\pi \left( 2\gamma + \ln \frac{4\pi^3}{\Gamma(\frac{1}{4})^4} \right) = \pi(2\gamma + 4\ln\Gamma(\frac{3}{4}) - \ln\pi)$ $= \pi \left( 2\ln 2 + 3\ln\pi + 2\gamma - 4\ln\Gamma(\frac{1}{4}) \right)$	1907	
Nielsen–Ramanujan constant [48]	$\frac{\zeta(2)}{2}$	0.82246 70334 24113 21823 [Mw 32][OEIS 33]	$\frac{\pi^2}{12} = \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n^2} = \frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \frac{1}{5^2} - \dots$	1909	<u>T</u>
Area of the Mandelbrot fractal [49]	$\gamma$	1.50659 18849 $\pm$ 0.00000 00028 [Mw 33][OEIS 34]		1912	
Gieseking constant [50]	$\pi \ln \beta$	1.01494 16064 09653 62502 [Mw 34][OEIS 35]	$\frac{3\sqrt{3}}{4} \left( 1 - \sum_{n=0}^{\infty} \frac{1}{(3n+2)^2} + \sum_{n=1}^{\infty} \frac{1}{(3n+1)^2} \right) =$ $\frac{3\sqrt{3}}{4} \left( 1 - \frac{1}{2^2} + \frac{1}{4^2} - \frac{1}{5^2} + \frac{1}{7^2} - \frac{1}{8^2} + \frac{1}{10^2} \pm \dots \right)$ .	1912	
Bernstein's constant [51]	$\beta$	0.28016 94990 23869 13303 [Mw 35][OEIS 36]	$\approx \frac{1}{2\sqrt{\pi}}$	1913	
Twin Primes Constant [52]	$C_2$	0.66016 18158 46869 57392 [Mw 36][OEIS 37]	$\prod_{p=3}^{\infty} \frac{p(p-2)}{(p-1)^2}$	1922	
Plastic number [53]	$\rho$	1.32471 79572 44746 02596 [Mw 37][OEIS 38]	$\sqrt[3]{1 + \sqrt[3]{1 + \sqrt[3]{1 + \dots}}} = \sqrt[3]{\frac{1}{2} + \frac{\sqrt{69}}{18}} + \sqrt[3]{\frac{1}{2} - \frac{\sqrt{69}}{18}}$	1929	<u>A</u>
Bloch–Landau constant [54]	$L$	0.54325 89653 42976 70695 [Mw 38][OEIS 39]	$= \frac{\Gamma(\frac{1}{3}) \Gamma(\frac{5}{6})}{\Gamma(\frac{1}{6})} = \frac{(-\frac{2}{3})! (-1 + \frac{5}{6})!}{(-1 + \frac{1}{6})!}$	1929	
Golomb–Dickman constant [55]	$\lambda$	0.62432 99885 43550 87099 [Mw 39][OEIS 40]	$\int_0^{\infty} \frac{f(x)}{x^2} dx = \int_0^1 e^{\text{Li}(n)} dn \quad \text{Li: Logarithmic integral}$ Para $x > 2$	1930 & 1964	
Feller–Tornier constant [56]	$C_{FT}$	0.66131 70494 69622 33528 [Mw 40][OEIS 41]	$\frac{1}{2} \prod_{n=1}^{\infty} \left( 1 - \frac{2}{p_n^2} \right) + \frac{1}{2} = \frac{3}{\pi^2} \prod_{n=1}^{\infty} \left( 1 - \frac{1}{p_n^2 - 1} \right) + \frac{1}{2}$ $p_n: \text{prime}$	1932	<u>T?</u>
Base 10 Champernowne constant [57]	$C_{10}$	0.12345 67891 01112 13141 [Mw 41][OEIS 42]	$\sum_{n=1}^{\infty} \sum_{k=10^{n-1}}^{10^n-1} \frac{k}{10^{kn-9} \sum_{j=0}^{n-1} 10^j(n-j-1)}$	1933	<u>T</u>
Gelfond–Schneider constant [58]	$G_{GS}$	2.66514 41426 90225 18865 [Mw 42][OEIS 43]	$2^{\sqrt{2}}$	1934	<u>T</u>
Khinchin's constant [59]	$K_0$	2.68545 20010 65306 44530 [Mw 43][OEIS 44]	$\prod_{n=1}^{\infty} \left[ 1 + \frac{1}{n(n+2)} \right]^{\ln n / \ln 2}$	1934	<u>T?</u>
Khinchin–Lévy constant [60]	$\beta$	1.18656 91104 15625 45282 [Mw 44][OEIS 45]	$\frac{\pi^2}{12 \ln 2}$	1935	
Khinchin–Lévy constant [61]	$\gamma$	3.27582 29187 21811 15978 [Mw 45][OEIS 46]	$e^{\pi^2/(12 \ln 2)}$	1936	
Mills' constant [62]	$\theta$	1.30637 78838 63080 69046 [Mw 46][OEIS 47]	$\lfloor \theta^{3^n} \rfloor$ is prime	1947	
Euler–Gompertz constant [63]	$G$	0.59634 73623 23194 07434 [Mw 47][OEIS 48]	$\int_0^{\infty} \frac{e^{-n}}{1+n} dn = \int_0^1 \frac{1}{1-\ln n} dn = \frac{1}{1+\frac{1}{1+\frac{1}{1+\frac{2}{1+\frac{3}{1+\dots}}}}}$	Before 1948 [OEIS 48]	

**1950–1999**

Name	Symbol	Decimal Expansion	Formula	Year	Set
Van der Pauw constant	$\alpha$	4.53236 01418 27193 80962 [OEIS 49]	$\frac{\pi}{\ln(2)} = \frac{\sum_{n=0}^{\infty} \frac{4(-1)^n}{2n+1}}{\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n}} = \frac{\frac{4}{1} - \frac{4}{3} + \frac{4}{5} - \frac{4}{7} + \frac{4}{9} - \dots}{\frac{1}{1} - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \frac{1}{5} - \dots}$	Before 1958 [OEIS 50]	
Magic angle [64]	$\theta_m$	0.95531 66181 245092 78163 [OEIS 51]	$\arctan(\sqrt{2}) = \arccos\left(\sqrt{\frac{1}{3}}\right) \approx 54.7356^\circ$	Before 1959 [65] [64]	T
Lochs constant [66]	$\ell_{Lo}$	0.97027 01143 92033 92574 [Mw 48] [OEIS 52]	$\frac{6 \ln 2 \ln 10}{\pi^2}$	1964	
Lieb's square ice constant [67]	$W_{2D}$	1.53960 07178 39002 03869 [Mw 49] [OEIS 53]	$\lim_{n \rightarrow \infty} (f(n))^{n-2} = \left(\frac{4}{3}\right)^{\frac{3}{2}} = \frac{8}{3\sqrt{3}}$	1967	A
Niven's constant [68]	$C$	1.70521 11401 05367 76428 [Mw 50] [OEIS 54]	$1 + \sum_{n=2}^{\infty} \left(1 - \frac{1}{\zeta(n)}\right)$	1969	
Baker constant [69]	$\beta_3$	0.83564 88482 64721 05333 [OEIS 55]	$\int_0^1 \frac{dt}{1+t^3} = \sum_{n=0}^{\infty} \frac{(-1)^n}{3n+1} = \frac{1}{3} \left( \ln 2 + \frac{\pi}{\sqrt{3}} \right)$	Before 1969 [69]	
Porter's constant [70]	$C$	1.46707 80794 33975 47289 [Mw 51] [OEIS 56]	$\frac{6 \ln 2}{\pi^2} \left( 3 \ln 2 + 4 \gamma - \frac{24}{\pi^2} \zeta'(2) - 2 \right) - \frac{1}{2}$ $\gamma = \text{Euler-Mascheroni Constant} = 0.5772156649\dots$ $\zeta'(2) = \text{Derivative of } \zeta(2) = - \sum_{n=2}^{\infty} \frac{\ln n}{n^2} = -0.9375482543\dots$	1974	
Feigenbaum constant $\delta$ [71]	$\delta$	4.66920 16091 02990 67185 [Mw 52] [OEIS 57]	$\lim_{n \rightarrow \infty} \frac{x_{n+1} - x_n}{x_{n+2} - x_{n+1}} \quad x \in (3.8284; 3.8495)$ $x_{n+1} = ax_n(1-x_n) \quad \text{or} \quad x_{n+1} = a \sin(x_n)$	1975	
Chaitin's constants [72]	$\Omega$	In general they are uncomputable numbers. But one such number is 0.00787 49969 97812 3844 [Mw 53] [OEIS 58]	$\sum_{p \in P} 2^{- p }$ <ul style="list-style-type: none"><li>▪ <math>p</math>: Halted program</li><li>▪ <math> p </math>: Size in bits of program <math>p</math></li><li>▪ <math>P</math>: Domain of all programs that stop.</li></ul>	1975	T
Fransén–Robinson constant [73]	$F$	2.80777 02420 28519 36522 [Mw 54] [OEIS 59]	$\int_0^\infty \frac{1}{\Gamma(x)} dx = e + \int_0^\infty \frac{e^{-x}}{\pi^2 + \ln^2 x} dx$	1978	
Robbins constant [74]	$\Delta(3)$	0.66170 71822 67176 23515 [Mw 55] [OEIS 60]	$\frac{4+17\sqrt{2}-6\sqrt{3}-7\pi}{105} + \frac{\ln(1+\sqrt{2})}{5} + \frac{2\ln(2+\sqrt{3})}{5}$	1978	
Feigenbaum constant $\alpha$ [75]	$\alpha$	2.50290 78750 95892 82228 [Mw 52] [OEIS 61]	$\lim_{n \rightarrow \infty} \frac{d_n}{d_{n+1}}$	1979	T?
Fractal dimension of the Cantor set [76]	$d_f(k)$	0.63092 97535 71457 43709 [Mw 56] [OEIS 62]	$\lim_{\varepsilon \rightarrow 0} \frac{\log N(\varepsilon)}{\log(1/\varepsilon)} = \frac{\log 2}{\log 3}$	Before 1979 [OEIS 62]	T
Connective constant [77] [78]	$\mu$	1.84775 90650 22573 51225 [Mw 57] [OEIS 63]	$\sqrt{2 + \sqrt{2}} = \lim_{n \rightarrow \infty} c_n^{1/n}$ as a root of the polynomial : $x^4 - 4x^2 + 2 = 0$	1982 [79]	A
Salem number, [80]	$\sigma_{10}$	1.17628 08182 59917 50654 [Mw 58] [OEIS 64]	$x^{10} + x^9 - x^7 - x^6 - x^5 - x^4 - x^3 + x + 1$	1983?	A
Lehmer's conjecture					
Chebyshev constant [81] . [82]	$\lambda_{Ch}$	0.59017 02995 08048 11302 [Mw 59] [OEIS 65]	$\frac{\Gamma(\frac{1}{4})^2}{4\pi^{3/2}} = \frac{4(\frac{1}{4}!)^2}{\pi^{3/2}}$	Before 1987 [Mw 59]	
Conway constant [83]	$\lambda$	1.30357 72690 34296 39125 [Mw 60] [OEIS 66]	$x^{71} - x^{60} - 2x^{68} - x^{67} + 2x^{66} + 2x^{65} + x^{64} - x^{63} - x^{62} - x^{61} - x^{60} - x^{59} + 2x^{58} + 5x^{57} + 3x^{56} - 2x^{55} - 10x^{54} - 3x^{53} - 2x^{52} + 6x^{51} + 6x^{50} + x^{49} + 9x^{48} - 3x^{47} - 7x^{46} - 8x^{45} - 8x^{44} + 10x^{43} + 6x^{42} + 8x^{41} - 5x^{40} - 12x^{39} + 7x^{38} - 7x^{37} + 7x^{36} + x^{35} - 3x^{34} - 10x^{33} + x^{32} - 6x^{31} - 2x^{30} - 10x^{29} - 3x^{28} + 2x^{27} + 9x^{26} - 3x^{25} + 14x^{24} - 8x^{23} - 7x^{21} + 9x^{20} + 3x^{19} - 4x^{18} - 10x^{17} - 7x^{16} + 12x^{15} + 7x^{14} + 2x^{13} - 12x^{12} - 4x^{11} - 2x^{10} + 5x^9 + x^7 - 7x^6 + 7x^5 - 4x^4 + 12x^3 - 6x^2 + 3x - 6 = 0$	1987	A

Name	Symbol	Decimal Expansion	Formula	Year	Set
Prévost constant, Reciprocal Fibonacci constant <sup>[84]</sup>	$\Psi$	3.35988 56662 43177 55317 [Mw 61][OEIS 67]	$\sum_{n=1}^{\infty} \frac{1}{F_n} = \frac{1}{1} + \frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \frac{1}{5} + \frac{1}{8} + \frac{1}{13} + \dots$ $F_n$ : Fibonacci series	Before 1988 <sup>[OEIS 67]</sup>	$\mathbb{R} \setminus \mathbb{Q}$
Brun <sub>2</sub> constant = $\Sigma$ inverse of Twin primes <sup>[85]</sup>	$B_2$	1.90216 05831 04 [Mw 62][OEIS 68]	$\sum_{\substack{p, p+2: \text{prime}}} \left( \frac{1}{p} + \frac{1}{p+2} \right) = \left( \frac{1}{3} + \frac{1}{5} \right) + \left( \frac{1}{5} + \frac{1}{7} \right) + \left( \frac{1}{11} + \frac{1}{13} \right) + \dots$	1989 <sup>[OEIS 68]</sup>	
Hafner–Sarnak–McCurley constant (1) <sup>[86]</sup>	$\sigma$	0.35323 63718 54995 98454 [Mw 63][OEIS 69]	$\prod_{k=1}^{\infty} \left\{ 1 - [1 - \prod_{j=1}^n (1 - p_k^{-j})]^2 \right\}$	1993	
Fractal dimension of the Apollonian packing of circles <sup>[87][88]</sup>	$\varepsilon$	1.30568 6729 $\approx$ by Thomas & Dhar 1.30568 8 $\approx$ by McMullen [Mw 64][OEIS 70]		1994 1998	
Backhouse's constant <sup>[89]</sup>	$B$	1.45607 49485 82689 67139 [Mw 65][OEIS 71]	$\lim_{k \rightarrow \infty} \left  \frac{q_{k+1}}{q_k} \right  \quad \text{where: } Q(x) = \frac{1}{P(x)} = \sum_{k=1}^{\infty} q_k x^k$ $P(x) = \sum_{k=1}^{\infty} \frac{p_k x^k}{p_k \text{ prime}} = 1 + 2x + 3x^2 + 5x^3 + \dots$	1995	
Viswanath constant <sup>[90]</sup>	$C_{Vi}$	1.13198 82487 943 [Mw 66][OEIS 72]	$\lim_{n \rightarrow \infty}  a_n ^{\frac{1}{n}} \quad \text{where } a_n = \text{Fibonacci sequence}$	1997	$\mathbb{T}?$
Time constant <sup>[91]</sup>	$\tau$	0.63212 05588 28557 67840 [Mw 67][OEIS 73]	$\lim_{n \rightarrow \infty} 1 - \frac{\ln n}{n!} = \lim_{n \rightarrow \infty} P(n) = \int_0^1 e^{-x} dx = 1 - \frac{1}{e} =$ $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n!} = \frac{1}{1!} - \frac{1}{2!} + \frac{1}{3!} - \frac{1}{4!} + \frac{1}{5!} - \frac{1}{6!} + \dots$	Before 1997 <sup>[91]</sup>	$\mathbb{T}$
Komornik–Loreti constant <sup>[92]</sup>	$q$	1.78723 16501 82965 93301 [Mw 68][OEIS 74]	$1 = \sum_{n=1}^{\infty} \frac{t_k}{q^k} \quad \text{Raiz real de } \prod_{n=0}^{\infty} \left( 1 - \frac{1}{q^{2^n}} \right) + \frac{q-2}{q-1} = 0$ $t_k = \text{Thue–Morse sequence}$	1998	$\mathbb{T}$
Regular paperfolding sequence <sup>[93][94]</sup>	$P_f$	0.85073 61882 01867 26036 [Mw 69][OEIS 75]	$\sum_{n=0}^{\infty} \frac{8^{2^n}}{2^{2^{n+2}} - 1} = \sum_{n=0}^{\infty} \frac{\frac{1}{2^{2^n}}}{1 - \frac{1}{2^{2^{n+2}}}}$	Before 1998 <sup>[94]</sup>	
Artin constant <sup>[95]</sup>	$C_{Artin}$	0.37395 58136 19202 28805 [Mw 70][OEIS 76]	$\prod_{n=1}^{\infty} \left( 1 - \frac{1}{p_n(p_n - 1)} \right) \quad p_n = \text{prime}$	1999	
MRB constant <sup>[96][97][98]</sup>	$C_{MRB}$	0.18785 96424 62067 12024 [Mw 71][Ow 1][OEIS 77]	$\sum_{n=1}^{\infty} (-1)^n (n^{1/n} - 1) = -\sqrt[4]{1} + \sqrt[3]{2} - \sqrt[3]{3} + \dots$	1999	
Somos' quadratic recurrence constant <sup>[99]</sup>	$\sigma$	1.66168 79496 33594 12129 [Mw 72][OEIS 78]	$\prod_{n=1}^{\infty} n^{1/2^n} = \sqrt{1 \sqrt{2 \sqrt{3 \dots}}} = 1^{1/2} 2^{1/4} 3^{1/8} \dots$	1999[Mw 72]	$\mathbb{T}?$

## 2000 onwards

Name	Symbol	Decimal Expansion	Formula	Year	Set
Foias constant $\alpha$ [100]	$F_\alpha$	1.18745 23511 26501 05459 [Mw 73][OEIS 79]	$x_{n+1} = \left(1 + \frac{1}{x_n}\right)^n$ for $n = 1, 2, 3, \dots$  Foias constant is the unique real number such that if $x_1 = \alpha$ then the sequence diverges to $\infty$ . When $x_1 = \alpha$ , $\lim_{n \rightarrow \infty} x_n \frac{\log n}{n} = 1$	2000	
Foias constant $\beta$	$F_\beta$	2.29316 62874 11861 03150 [Mw 73][OEIS 80]	$x^{x+1} = (x + 1)^x$	2000	
Raabe's formula [101]	$\zeta'(0)$	0.91893 85332 04672 74178 [Mw 74][OEIS 81]	$\int_a^{a+1} \log \Gamma(t) dt = \frac{1}{2} \log 2\pi + a \log a - a, \quad a \geq 0$	Before 2011[101]	
Kepler–Bouwkamp constant [102]	$\rho$	0.11494 20448 53296 20070 [Mw 75][OEIS 82]	$\prod_{n=3}^{\infty} \cos\left(\frac{\pi}{n}\right) = \cos\left(\frac{\pi}{3}\right) \cos\left(\frac{\pi}{4}\right) \cos\left(\frac{\pi}{5}\right) \dots$	Before 2013[102]	
Prouhet–Thue–Morse constant [103]	$\tau$	0.41245 40336 40107 59778 [Mw 76][OEIS 83]	$\sum_{n=0}^{\infty} \frac{t_n}{2^{n+1}}$ where $t_n$ is the Thue–Morse sequence and Where $\tau(x) = \sum_{n=0}^{\infty} (-1)^{t_n} x^n = \prod_{n=0}^{\infty} (1 - x^{2^n})$	Before 2014[103]	$\underline{T}$
Heath-Brown–Moroz constant [104]	$C_{HBM}$	0.00131 76411 54853 17810 [Mw 77][OEIS 84]	$\prod_{n=1}^{\infty} \left(1 - \frac{1}{p_n}\right)^7 \left(1 + \frac{7p_n + 1}{p_n^2}\right)$	Before 2002[104]	$\underline{T}?$
Lebesgue constant [105]	$C_1$	0.98943 12738 31146 95174 [Mw 78][OEIS 85]	$\lim_{n \rightarrow \infty} \left(L_n - \frac{4}{\pi^2} \ln(2n+1)\right) = \frac{4}{\pi^2} \left(\sum_{k=1}^{\infty} \frac{2 \ln k}{4k^2 - 1} - \frac{\Gamma'(\frac{1}{2})}{\Gamma(\frac{1}{2})}\right)$	Before 2002[105]	
2nd du Bois-Reymond constant [106]	$C_2$	0.19452 80494 65325 11361 [Mw 79][OEIS 86]	$\frac{e^2 - 7}{2} = \int_0^{\infty} \left  \frac{d}{dt} \left( \frac{\sin t}{t} \right)^n \right  dt - 1$	Before 2003[106]	$\underline{T}$
Stephens constant [107]	$C_S$	0.57595 99688 92945 43964 [Mw 80][OEIS 87]	$\prod_{n=1}^{\infty} \left(1 - \frac{p}{p^3 - 1}\right)$	Before 2005[107]	$\underline{T}?$
Taniguchi constant [107]	$C_T$	0.67823 44919 17391 97803 [Mw 81][OEIS 88]	$\prod_{n=1}^{\infty} \left(1 - \frac{3}{p_n^3} + \frac{2}{p_n^4} + \frac{1}{p_n^5} - \frac{1}{p_n^6}\right)$	Before 2005[107]	$\underline{T}?$
Copeland–Erdős constant [108]	$C_{CE}$	0.23571 11317 19232 93137 [Mw 82][OEIS 89]	$\sum_{n=1}^{\infty} \frac{p_n}{10^{n + \sum_{k=1}^n \lfloor \log_{10} p_k \rfloor}}$	Before 2012[108]	$\mathbb{R} \setminus \mathbb{Q}$
Hausdorff dimension, Sierpinski triangle [109]	$\log_2 3$	1.58496 25007 21156 18145 [Mw 83][OEIS 90]	$\frac{\log 3}{\log 2} = \frac{\sum_{n=0}^{\infty} \frac{1}{2^{2n+1}(2n+1)}}{\sum_{n=0}^{\infty} \frac{1}{3^{2n+1}(2n+1)}} = \frac{\frac{1}{2} + \frac{1}{24} + \frac{1}{160} + \dots}{\frac{1}{3} + \frac{1}{81} + \frac{1}{1215} + \dots}$	Before 2002[109]	$\underline{T}$
Landau–Ramanujan constant [110]	$K$	0.76422 36535 89220 66299 [Mw 84][OEIS 91]	$\frac{1}{\sqrt{2}} \prod_{p \equiv 3 \pmod{4}} \left(1 - \frac{1}{p^2}\right)^{-\frac{1}{2}} = \frac{\pi}{4} \prod_{p \equiv 1 \pmod{4}} \left(1 - \frac{1}{p^2}\right)^{\frac{1}{2}}$	Before 2005[110]	$\underline{T}?$
Brun $_4$ constant = $\Sigma$ inv.prime quadruplets [111]	$B_4$	0.87058 83799 75 [Mw 62][OEIS 92]	$\sum \left( \frac{1}{p} + \frac{1}{p+2} + \frac{1}{p+6} + \frac{1}{p+8} \right) \quad p, p+2, p+6, p+8: \text{prime}$ $\left( \frac{1}{5} + \frac{1}{7} + \frac{1}{11} + \frac{1}{13} \right) + \left( \frac{1}{11} + \frac{1}{13} + \frac{1}{17} + \frac{1}{19} \right) + \dots$	Before 2002[111]	
Ramanujan nested radical [112]	$R_5$	2.74723 82749 32304 33305	$\sqrt{5 + \sqrt{5 + \dots}}}}}}} = \frac{2 + \sqrt{5} + \sqrt{15 - 6\sqrt{5}}}{2}$	Before 2001[112]	$\underline{A}$

## Other constants

Name	Symbol	Decimal Expansion	Formula	Year	Set
DeVicci's tesseract constant	$f_{(3,4)}$	1.00743 47568 84279 37609 [Mw 85][OEIS 93]	The largest cube that can pass through in an 4D hypercube. Positive root of $4x^4 - 28x^3 - 7x^2 + 16x + 16 = 0$		A
Glaisher–Kinkelin constant	$A$	1.28242 71291 00622 63687 [Mw 86][OEIS 94]	$e^{\frac{1}{12} - \zeta'(-1)} = e^{\frac{1}{8} - \frac{1}{2} \sum_{n=0}^{\infty} \frac{1}{n+1} \sum_{k=0}^n (-1)^k \binom{n}{k} (k+1)^2 \ln(k+1)}$		

## See also

- Mathematical constants by continued fraction representation
- List of mathematical symbols
- List of mathematical symbols by subject
- List of numbers
- Invariant (mathematics)

## Notes

1. 1 can be given as a primitive notion within Peano arithmetic. Alternatively, 0 can be a primitive notion in Peano arithmetic and 1 defined as the successor to 0. This article uses the former definition for pedagogical and chronological simplicity.
2. Both  $i$  and  $-i$  are roots of this equation, though neither root is truly "positive" nor more fundamental than the other as they are algebraically equivalent. The distinction between signs of  $i$  and  $-i$  is in some ways arbitrary, but a useful notational device. See imaginary unit for more information.
3. Can also be defined by the infinite series  $\sum_{n=0}^{\infty} \frac{1}{n!} = \frac{1}{0!} + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \dots$

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