On the new developments concerning the Mock theta functions of various order. Further mathematical connections with some sectors of Particle Physics and Black Hole Physics.

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Abstract

In the present research thesis, we have obtained further interesting mathematical connections with various Ramanujan's Mock theta functions of order 8, order 7, order 6, order 2 and some sectors of Particle Physics and Black Hole Physics.

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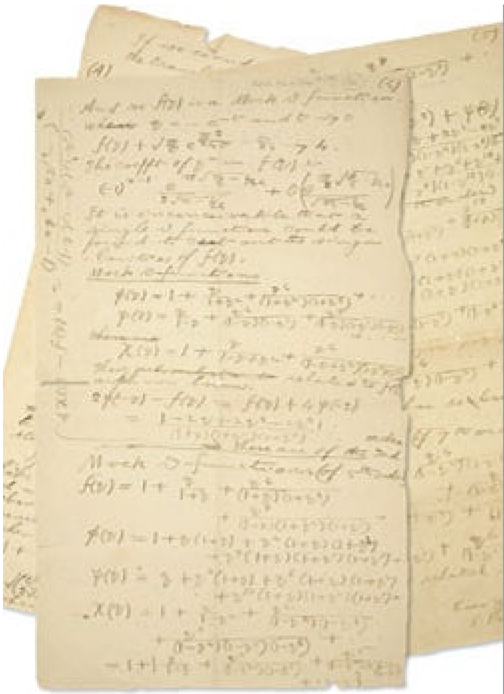
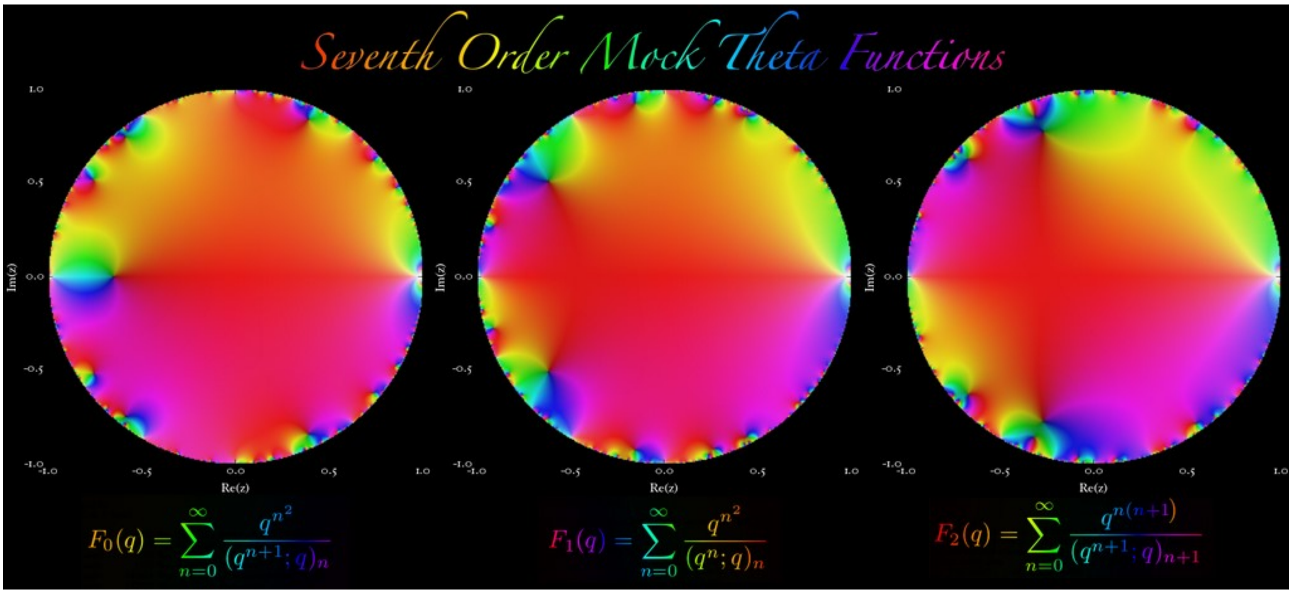
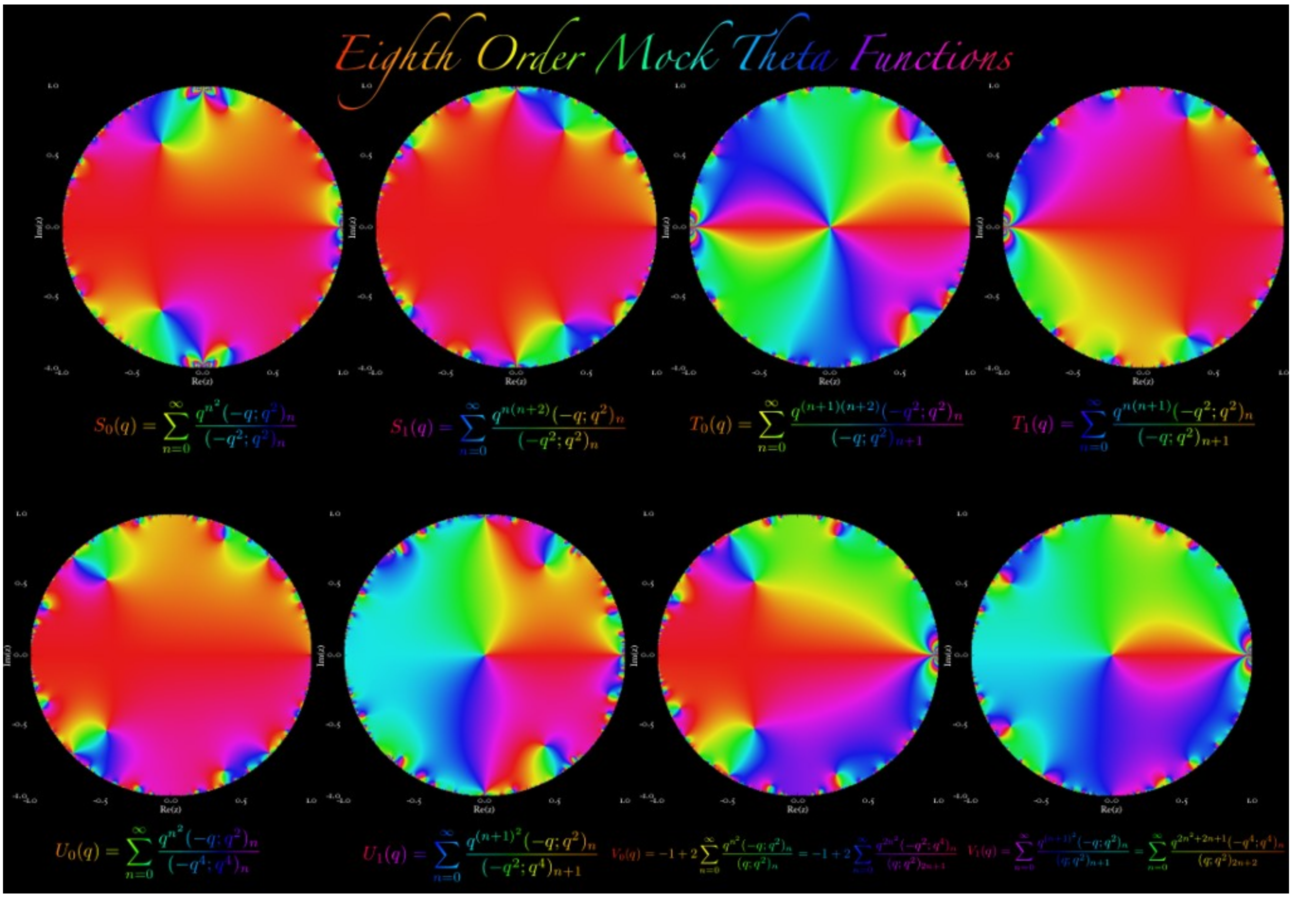


https://www.scientificamerican.com/article/one-of-srinivasa-ramanujans-neglected-manuscripts-has-helped-solve-long-standing-mathematical-mysteries/?redirect=1



http://owen.maresh.info/mocktheta.html



http://owen.maresh.info/mocktheta.html

Gordon & McIntosh (2000) found eight mock theta functions of order 8. They found five linear relations involving them, and expressed four of the functions as Appell–Lerch sums, and described their transformations under the modular group. **The two functions V_1 and U_0 were found earlier by Ramanujan (1988**, p. 8, eqn 1; p. 29 eqn 6) in his lost notebook.

Order 6

Ramanujan (1988) wrote down seven mock theta functions of order 6 in his lost notebook, and stated 11 identities between them, which were proved in (Andrews & Hickerson 1991). Two of Ramanujan's identities relate φ and ψ at various arguments, four of them express φ and ψ in terms of Appell–Lerch series, and the last five identities express the remaining five sixth-order mock theta functions in terms of φ and ψ. Berndt & Chan (2007) discovered two more sixth order functions. The order 6 mock theta functions are:

$$\phi(q) = \sum_{n\geq 0} \frac{(-1)^n q^{n^2} (q;q^2)_n}{(-q;q)_{2n}}$$ (sequence A053268 in the OEIS)

$$\psi(q) = \sum_{n\geq 0} \frac{(-1)^n q^{(n+1)^2} (q;q^2)_n}{(-q;q)_{2n+1}}$$ (sequence A053269 in the OEIS)

$$\rho(q) = \sum_{n\geq 0} \frac{q^{n(n+1)/2} (-q;q)_n}{(q;q^2)_{n+1}}$$ (sequence A053270 in the OEIS)

$$\sigma(q) = \sum_{n\geq 0} \frac{q^{(n+1)(n+2)/2} (-q;q)_n}{(q;q^2)_{n+1}}$$ (sequence A053271 in the OEIS)

$$\lambda(q) = \sum_{n\geq 0} \frac{(-1)^n q^n (q;q^2)_n}{(-q;q)_n}$$ (sequence A053272 in the OEIS)

$$2\mu(q) = \sum_{n\geq 0} \frac{(-1)^n q^{n+1} (1+q^n)(q;q^2)_n}{(-q;q)_{n+1}}$$ (sequence A053273 in the OEIS)

$$\gamma(q) = \sum_{n\geq 0} \frac{q^{n^2} (q;q)_n}{(q^3;q^3)_n}$$ (sequence A053274 in the OEIS)

$$\phi_-(q) = \sum_{n\geq 1} \frac{q^n (-q;q)_{2n-1}}{(q;q^2)_n}$$ (sequence A153251 in the OEIS)

$$\psi_-(q) = \sum_{n\geq 1} \frac{q^n (-q;q)_{2n-2}}{(q;q^2)_n}$$ (sequence A153252 in the OEIS)

From:

American Journal of Mathematics and Statistics 2013, 3(3): 143-152 DOI: 10.5923/j.ajms.20130303.07

Relations Connecting Eighth Order Mock Theta Functions - *Roselin Antony*

Mock theta functions of order 8:

Gordon and McIntosh[8] found the following eight mock theta functions of order 8;

$$S_0(q)=\sum_{n=0}^{\infty}\frac{q^{n^2}(-q;q^2)_n}{(-q^2;q^2)_n} \quad (1.3)$$

$$S_1(q)=\sum_{n=0}^{\infty}\frac{q^{n(n+2)}(-q;q^2)_n}{(-q^2;q^2)_n} \quad (1.4)$$

$$T_0(q)=\sum_{n=0}^{\infty}\frac{q^{(n+1)(n+2)}(-q^2;q^2)_n}{(-q;q^2)_{n+1}} \quad (1.5)$$

$$T_1(q)=\sum_{n=0}^{\infty}\frac{q^{n(n+1)}(-q^2;q^2)_n}{(-q;q^2)_{n+1}} \quad (1.6)$$

$$U_0(q)=\sum_{n=0}^{\infty}\frac{q^{n^2}(-q;q^2)_n}{(-q^4;q^4)_n} \quad (1.7)$$

$$U_1(q)=\sum_{n=0}^{\infty}\frac{q^{(n+1)^2}(-q;q^2)_n}{(-q^2;q^4)_{n+1}} \quad (1.8)$$

$$V_0(q)=-1+2\sum_{n=0}^{\infty}\frac{q^{n^2}(-q;q^2)_n}{(q;q^2)_n}$$

$$=-1+2\sum_{n=0}^{\infty}\frac{q^{2n^2}(-q^2;q^4)_n}{(q;q^2)_{2n+1}} \quad (1.9)$$

$$V_1(q)=\sum_{n=0}^{\infty}\frac{q^{(n+1)^2}(-q;q^2)_n}{(q;q^2)_{n+1}}$$

$$=\sum_{n=0}^{\infty}\frac{q^{2n^2+2n+1}(-q^4;q^4)_n}{(q;q^2)_{2n+2}} \quad (1.10)$$

Now, we analyze some mock theta functions of order 8.

From Wikipedia:

$$V_1(q)=\sum_{n\geq 0}\frac{q^{(n+1)^2}(-q;q^2)_n}{(q;q^2)_{n+1}}=\sum_{n\geq 0}\frac{q^{2n^2+2n+1}(-q^4;q^4)_n}{(q;q^2)_{2n+2}}$$

$$V_0(q)=-1+2\sum_{n\geq 0}\frac{q^{n^2}(-q;q^2)_n}{(q;q^2)_n}=-1+2\sum_{n\geq 0}\frac{q^{2n^2}(-q^2;q^4)_n}{(q;q^2)_{2n+1}}$$

$$U_1(q)=\sum_{n\geq 0}\frac{q^{(n+1)^2}(-q;q^2)_n}{(-q^2;q^4)_{n+1}}$$

$$U_0(q)=\sum_{n\geq 0}\frac{q^{n^2}(-q;q^2)_n}{(-q^4;q^4)_n}$$

We have from OEIS, that

$$V_1(q)=\sum_{n\geq 0}\frac{q^{(n+1)^2}(-q;q^2)_n}{(q;q^2)_{n+1}}=\sum_{n\geq 0}\frac{q^{2n^2+2n+1}(-q^4;q^4)_n}{(q;q^2)_{2n+2}}$$

Is: Sum_{n >= 0} q^((n+1)^2)(1+q)(1+q^3)...(1+q^(2n-1))/((1-q)(1-q^3)...(1-q^(2n+1)))

sum 0.5^((n+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5

Sum:

$$\sum_{n=0}^{5}\frac{(1+0.5)(1+0.5^3)\,0.5^{(n+1)^2}\,(0.5^{2n-1}+1)}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})}=\frac{5\,939\,749\,430\,500\,584\,097\,989}{495\,247\,224\,344\,833\,687\,552}$$

Open code

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Decimal approximation:

- More digits

11.99350372605989606003952886769686016385896304671547803396...

Open code

((((sum 0.5^((n+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5))))^3

Input interpretation:

$$\left(\sum_{n=0}^{5} 0.5^{(n+1)^2} (1+0.5)(1+0.5^3) \times \frac{1+0.5^{2n-1}}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})}\right)^3$$

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Result:

1725.2

2 * sum 0.5^((n+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5

Input interpretation:

$$2\sum_{n=0}^{5} 0.5^{(n+1)^2} (1+0.5)(1+0.5^3) \times \frac{1+0.5^{2n-1}}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})}$$

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Result:

23.987

[(((((sum 0.5^((n+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5))))^3))]^1/15

Input interpretation:

$$\sqrt[15]{\left(\sum_{n=0}^{5} 0.5^{(n+1)^2} (1+0.5)(1+0.5^3) \times \frac{1+0.5^{2n-1}}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})}\right)^3}$$

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Result:

1.64357

1.64357 very near to the value of $\zeta(2) = \pi^2/6 = 1.6449...$

Then:

(((q^((n+1)^2)(1+q)(1+q^3)(1+q^(2n-1)))/(((1-q)(1-q^3)(1-q^(2n+1)))

Input:

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

Open code

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Alternate form:

$$-\frac{(q+1)^2((q-1)q+1)q^{n(n+2)}(q^{2n}+q)}{(q-1)^2(q^2+q+1)(q^{2n+1}-1)}$$

Expanded form:

- Step-by-step solution

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

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Series expansion at q = 0:

$$\frac{1}{q^{2n+1}-1} q^{n(n+2)} \left(q^{2n}\left(-1-2q-2q^2-4q^3-6q^4-6q^5+O\left(q^6\right)\right) + \left(-q-2q^2-2q^3-4q^4-6q^5+O\left(q^6\right)\right)\right)$$

Open code

- Big-O notation

Series expansion at q = ∞:

$$\frac{1}{q^{2n+1}-1} q^{n(n+2)} \left(q^{2n}\left(-1-\frac{2}{q}-\frac{2}{q^2}-\frac{4}{q^3}-\frac{6}{q^4}-\frac{6}{q^5}-\frac{8}{q^6}-\frac{10}{q^7}-\frac{10}{q^8}+O\left(\left(\frac{1}{q}\right)^9\right)\right) + \left(-q-2-\frac{2}{q}-\frac{4}{q^2}-\frac{6}{q^3}-\frac{6}{q^4}-\frac{8}{q^5}-\frac{10}{q^6}-\frac{10}{q^7}+O\left(\left(\frac{1}{q}\right)^8\right)\right)\right)$$

Derivative:

- Step-by-step solution

$$\frac{\partial}{\partial q}\left(\frac{q^{(n+1)^2}(1+q)(1+q^3)(1+q^{2n-1})}{(1-q)(1-q^3)(1-q^{2n+1})}\right) =$$

$$-\Big(\Big((1+q)\,q^{(n+1)^2-2}\big(-n^2 q^{2n+2}+n^2 q^{2n+8}-(n^2+2n-1)q^{4n+1}+(n^2+2n-1)q^{4n+7}+ 2q^{2n+1}+6q^{2n+3}-6q^{2n+5}-n(n+4)q^{2n+6}-2q^{2n+7}-2q^{4n+2}- 8q^{4n+4}-2q^{4n+6}+n(n+4)q^{2n}-(n+1)^2q^7+(n+1)^2q+ 2q^6+8q^4+2q^2\big)\Big)\Big/\left((q-1)^3(q^2+(1+q))^2(1-q^{2n+1})^2\right)\Big)$$

For q = 0.5 and n =2, we obtain:

(((0.5^((2+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1))) / ((1-0.5)(1-0.5^3)(1-0.5^(2*2+1)))

Input:

$$\frac{0.5^{(2+1)^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1-0.5)(1-0.5^3)(1-0.5^{2\times2+1})}$$

Open code

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Result:

- More digits

0.0087485599078341013824884792626728110599078341013824884 79...

Open code

Repeating decimal:

$0.00874855\overline{990783410138248847926267281106}$ (period 30)

And

(0.923910279+0.924340867) * [((((0.5^((2+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1))) / ((1-0.5)(1-0.5^3)(1-0.5^(2*2+1))))] * 10^2

where 0.923910279 and 0.924340867 are results of some Ramanujan mock theta functions (see our previous papers)

Input interpretation:

$$(0.923910279+0.924340867)\left(\frac{0.5^{(2+1)^2}\,(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2-1}\right)}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2+1}\right)}\times 10^2\right)$$

Open code

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Result:

- More digits

  1.616953587550403225806451612903225806451612903225806451612...

Open code

Repeating decimal:

$1.616953587550\overline{403225806451612}$ (period 15)

1.616953587550403225806451612903225806451612903225806451612

This result is a golden number, near to the value of golden ratio

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{6+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{3+\cfrac{1}{6+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{5+\cfrac{1}{8+\cfrac{1}{5+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}}}}$$

Open code

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Possible closed forms:

- More

$-\csc\left(\tan\left(\frac{159430603}{19353094}\right)\right) \approx 1.61695358755040322 46440$

root of $11310x^3 - 17874x^2 - 4598x + 6353$ near $x = 1.61695$ $\approx$

$1.61695358755040322580 58173$

$\frac{2804211324\pi}{5448325643} \approx 1.61695358755040322579991$

1,616953587550403225 * 5448325643 ≈ 2804211324π

π = (8809689694,591707445757398675 / 2804211324) =

= 3,14159265358979323690848866816 71

Now:

$$V_0(q) = -1 + 2\sum_{n\geq 0} \frac{q^{n^2}(-q;q^2)_n}{(q;q^2)_n} = -1 + 2\sum_{n\geq 0} \frac{q^{2n^2}(-q^2;q^4)_n}{(q;q^2)_{2n+1}}$$

V_0(q) = -1 + 2Sum_{n >= 0} q^(n^2)(1+q)(1+q^3)...(1+q^(2n-1))/((1-q)(1-q^3)...(1-q^(2n-1)))

Input interpretation:

$$-1 + 2\sum_{n=0}^{5} q^{n^2} (1+q)(1+q^3) \times \frac{1+q^{2n-1}}{(1-q)(1-q^3)(1-q^{2n-1})}$$

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Result:

$$2\left(\frac{(q+1)^2(q^3+1)q}{(1-q)^2(1-q^3)} + \frac{\left(\frac{1}{q}+1\right)(q+1)(q^3+1)}{\left(1-\frac{1}{q}\right)(1-q)(1-q^3)} + \frac{(q+1)(q^3+1)^2 q^4}{(1-q)(1-q^3)^2} + \frac{(q+1)(q^3+1)(q^9+1)q^{25}}{(1-q)(1-q^3)(1-q^9)} + \frac{(q+1)(q^3+1)(q^7+1)q^{16}}{(1-q)(1-q^3)(1-q^7)} + \frac{(q+1)(q^3+1)(q^5+1)q^9}{(1-q)(1-q^3)(1-q^5)}\right) - 1$$

-1 + 2sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1-0.5)(1-0.5^3)(1-0.5^(2n-1))), n = 0 to 5

Input interpretation:

$$-1 + 2\sum_{n=0}^{5} 0.5^{n^2} (1+0.5)(1+0.5^3) \times \frac{1+0.5^{2n-1}}{(1-0.5)(1-0.5^3)(1-0.5^{2n-1})}$$

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Result:

-11.9354

-27+[((((-1 + 2sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1-0.5)(1-0.5^3)(1-0.5^(2n-1))), n = 0 to 5))))]^3

Input interpretation:

$$-27+\left(-1+2\sum_{n=0}^{5} 0.5^{n^2}\,(1+0.5)\left(1+0.5^3\right)\times\frac{1+0.5^{2n-1}}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n-1}\right)}\right)^3$$

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Result:

-1727.23

1727.23

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

2[((((-1 + 2sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1-0.5)(1-0.5^3)(1-0.5^(2n-1))), n = 0 to 5))))]

Input interpretation:

$$2\left(-1+2\sum_{n=0}^{5} 0.5^{n^2}\,(1+0.5)\left(1+0.5^3\right)\times\frac{1+0.5^{2n-1}}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n-1}\right)}\right)$$

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Result:

-23.8707

23.8707 This result is very near to the value of black hole entropy 23.90

((((-(-27+[((((-1 + 2sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1-0.5)(1-0.5^3)(1-0.5^(2n-1))), n = 0 to 5))))]^3)))))^1/15

Input interpretation:

$$\sqrt[15]{-\left(-27+\left(-1+2\sum_{n=0}^{5} 0.5^{n^2}\,(1+0.5)\left(1+0.5^3\right)\times\frac{1+0.5^{2n-1}}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n-1}\right)}\right)^3\right)}$$

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Result:

1.6437

1.6437 very near to the value of $\zeta(2) = \pi^2/6 = 1.6449...$

Then:

-1+2 * q^(n^2)(1+q)(1+q^3)...(1+q^(2n-1))/((1-q)(1-q^3)...(1-q^(2n-1)))

-1 + 2 * (((q^(n^2)(1+q)(1+q^3)(1+q^(2n-1)))/(((1-q)(1-q^3)(1-q^(2n-1)))

Input:

$$-1+2\times\frac{q^{n^2}(1+q)(1+q^3)(1+q^{2n-1})}{(1-q)(1-q^3)(1-q^{2n-1})}$$

Open code

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Alternate forms:

$$-\frac{2(q+1)^2((q-1)q+1)(q^{2n}+q)q^{n^2}}{(q-1)^2(q^2+q+1)(q^{2n}-q)}-1$$

Open code

$$-\left(\left(2q^{n^2+1}+2q^{n^2+2}+2q^{n^2+4}+2q^{n^2+5}+2q^{n^2+2n}+2q^{n^2+2n+1}+2q^{n^2+2n+3}+2q^{n^2+2n+4}-q^{2n+1}-q^{2n+3}+q^{2n+4}+q^{2n}-q^5+q^4+q^2-q\right)\Big/\left((q-1)^2(q^2+q+1)(q^{2n}-q)\right)\right)$$

Open code

Expanded form:

- Step-by-step solution

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

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Series expansion at q = 0:

$$-\frac{1}{(-q+O(q^6))+q^{2n}}\left(q^{n^2}\left(2q+4q^2+4q^3+8q^4+12q^5+O(q^6)\right)+q^{n(n+2)}\left(2+4q+4q^2+8q^3+12q^4+12q^5+O(q^6)\right)+(-q+O(q^6))+q^{2n}\right)$$

Derivative:

- Step-by-step solution

$$\frac{\partial}{\partial q}\left(-1+\frac{2\left(q^{n^2}(1+q)(1+q^3)(1+q^{2n-1})\right)}{(1-q)(1-q^3)(1-q^{2n-1})}\right)=$$

$$-\left(\left(2(1+q)q^{n^2-1}\left(n^2(q^6-1)(q^{4n}-q^2)-4n(q^6-1)q^{2n+1}+2q\left(q^{2n+6}-4q^{4n+2}-q^{4n+4}-q^{4n}-q^{2n}+q^6+4q^4+q^2\right)\right)\right)\Big/\left((q-1)^3(q^2+(1+q))^2(q-q^{2n})^2\right)\right)$$

For q = 0,5 and n = 2, we obtain:

-1 + 2 * (((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))/(((1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))

Input:

$$-1 + 2 \times \frac{0.5^{2^2} (1 + 0.5)(1 + 0.5^3)(1 + 0.5^{2 \times 2 - 1})}{(1 - 0.5)(1 - 0.5^3)(1 - 0.5^{2 \times 2 - 1})}$$

Open code

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Result:

- More digits

−0.3801020408163265306122448979591836734693877551020408163 2...

Open code

sqrt(((-(1/[-1 + 2 * (((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))/(((1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))]))))

Input:

$$\sqrt{-\frac{1}{-1 + 2 \times \frac{0.5^{2^2} (1+0.5)(1+0.5^3)(1+0.5^{2 \times 2 - 1})}{(1-0.5)(1-0.5^3)(1-0.5^{2 \times 2 - 1})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1.621996449817778272583121046910102734468496179612698348604...

1.6219964498177782725831210469101027344684961796126983

1.62199644… is a golden number

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{5+\cfrac{1}{10+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{3+\cfrac{1}{2+\cfrac{1}{17+\cfrac{1}{2+\cfrac{1}{7+\cfrac{1}{\cdots}}}}}}}}}}}}}}}}}}}}}}$$

Open code

- Possible closed forms:
  More

$$14\sqrt{\frac{2}{149}} \approx$$

1.621996449817778272583121046910102734468496179612698348604

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π (root of $998x^5+12x^4+90x^3-1560x^2-461x+604$ near $x = 0.516298$) $\approx$

1.6219964498177782725864429

$$\frac{5207345584\,\pi}{10085939851} \approx 1.6219964498177782725884218$$

(1.62199644981777827258*10085939851)/5207345584

Input interpretation:

$$\frac{1.62199644981777827258\times 10085939851}{5207345584}$$

Open code

Enlarge Data Customize A Plaintext Interactive

- Result:
  More digits

3.141592653589793238446331351758427869303478898895372410528...

3.141592653589793238446331351758427869303478898895372410528

Now:

$$U_1(q) = \sum_{n\geq 0} \frac{q^{(n+1)^2}(-q;q^2)_n}{(-q^2;q^4)_{n+1}}$$

Sum_{n >= 0}

q^((n+1)^2)(1+q)(1+q^3)...(1+q^(2n-1))/((1+q^2)(1+q^6)...(1+q^(4n+2))).

sum q^((n+1)^2)(1+q)(1+q^3)(1+q^(2n-1))/((1+q^2)(1+q^6)(1+q^(4n+2))), n = 0 to 5

Result:

$$\sum_{n=0}^{5} \frac{q^{(n+1)^2}(1+q)(1+q^3)(1+q^{2n-1})}{(1+q^2)(1+q^6)(1+q^{4n+2})} = \frac{\left(\frac{1}{q}+1\right)(q+1)(q^3+1)q}{(q^2+1)^2(q^6+1)} + \frac{(q+1)^2(q^3+1)q^4}{(q^2+1)(q^6+1)^2} + \frac{(q+1)(q^3+1)^2 q^9}{(q^2+1)(q^6+1)(q^{10}+1)} + \frac{(q+1)(q^3+1)(q^9+1)q^{36}}{(q^2+1)(q^6+1)(q^{22}+1)} + \frac{(q+1)(q^3+1)(q^7+1)q^{25}}{(q^2+1)(q^6+1)(q^{18}+1)} + \frac{(q+1)(q^3+1)(q^5+1)q^{16}}{(q^2+1)(q^6+1)(q^{14}+1)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

$$\sum_{n=0}^{5} \frac{q^{(n+1)^2}(1+q)(1+q^3)(1+q^{2n-1})}{(1+q^2)(1+q^6)(1+q^{4n+2})} = \frac{1}{(q^2+1)^2(q^6+1)^2} q(q+1)(q^3+1)\left(\left(\frac{1}{q}+1\right)(q^6+1)+(q+1)(q^2+1)q^3 + \frac{(q^2+1)(q^6+1)(q^9+1)q^{35}}{q^{22}+1} + \frac{(q^2+1)(q^6+1)(q^7+1)q^{24}}{q^{18}+1} + \frac{(q^2+1)(q^5+1)(q^6+1)q^{15}}{q^{14}+1} + \frac{(q^2+1)(q^3+1)(q^6+1)q^8}{q^{10}+1}\right)$$

Open code

sum 0.5^((n+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^2)(1+0.5^6)(1+0.5^(4n+2))), n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(1+0.5)(1+0.5^3)\,0.5^{(n+1)^2}(0.5^{2n-1}+1)}{(1+0.5^2)(1+0.5^6)(0.5^{4n+2}+1)} = \frac{43313555682788469893707383}{25171851645640221982720000}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

1.720713926513642100085597524089282549536162124629177698628...

Open code

8+10^3[(((sum 0.5^((n+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^2)(1+0.5^6)(1+0.5^(4n+2))), n = 0 to 5)))]

Input interpretation:

$$8 + 10^3 \sum_{n=0}^{5} 0.5^{(n+1)^2} (1 + 0.5)(1 + 0.5^3) \times \frac{1 + 0.5^{2n-1}}{(1 + 0.5^2)(1 + 0.5^6)(1 + 0.5^{4n+2})}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1728.71

1728.71

This result is very near to the mass of candidate glueball $f_0(1710)$ meson. Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729

((((((((8+10^3[(((sum 0.5^((n+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^2)(1+0.5^6)(1+0.5^(4n+2))), n = 0 to 5)))]))))))))^1/3

Input interpretation:

$$\sqrt[3]{8 + 10^3 \sum_{n=0}^{5} 0.5^{(n+1)^2} (1 + 0.5)(1 + 0.5^3) \times \frac{1 + 0.5^{2n-1}}{(1 + 0.5^2)(1 + 0.5^6)(1 + 0.5^{4n+2})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0017

This result is very near to the value of black hole entropy 12,1904

2((((((((8+10^3[(((sum 0.5^((n+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^2)(1+0.5^6)(1+0.5^(4n+2))), n = 0 to 5)))]))))))))^1/3

Input interpretation:

$$2 \sqrt[3]{8 + 10^3 \sum_{n=0}^{5} 0.5^{(n+1)^2} (1 + 0.5)(1 + 0.5^3) \times \frac{1 + 0.5^{2n-1}}{(1 + 0.5^2)(1 + 0.5^6)(1 + 0.5^{4n+2})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0033

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((8+10^3[(((sum 0.5^((n+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^2)(1+0.5^6)(1+0.5^(4n+2))), n = 0 to 5)))]))))))))^1/15

Input interpretation:

$$\sqrt[15]{8+10^3 \sum_{n=0}^{5} 0.5^{(n+1)^2} (1+0.5)(1+0.5^3) \times \frac{1+0.5^{2n-1}}{(1+0.5^2)(1+0.5^6)(1+0.5^{4n+2})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.6438

1.6438 is very near to the value of $\zeta(2) = \pi^2/6 = 1.6449...$

Then:

(((q^((n+1)^2)(1+q)(1+q^3)(1+q^(2n-1))) / (((1+q^2)(1+q^6)(1+q^(4n+2)))

Input:

$$\frac{q^{(n+1)^2}(1+q)(1+q^3)(1+q^{2n-1})}{(1+q^2)(1+q^6)(1+q^{4n+2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Expanded form:

- Step-by-step solution

$$\frac{q^{(n+1)^2}}{(q^2+1)(q^6+1)(q^{4n+2}+1)} + \frac{q^{(n+1)^2+1}}{(q^2+1)(q^6+1)(q^{4n+2}+1)} + \frac{q^{(n+1)^2+3}}{(q^2+1)(q^6+1)(q^{4n+2}+1)} + \frac{q^{(n+1)^2+4}}{(q^2+1)(q^6+1)(q^{4n+2}+1)} + \frac{q^{(n+1)^2+2n-1}}{(q^2+1)(q^6+1)(q^{4n+2}+1)} + \frac{q^{(n+1)^2+2n}}{(q^2+1)(q^6+1)(q^{4n+2}+1)} + \frac{q^{(n+1)^2+2n+2}}{(q^2+1)(q^6+1)(q^{4n+2}+1)} + \frac{q^{(n+1)^2+2n+3}}{(q^2+1)(q^6+1)(q^{4n+2}+1)}$$

Alternate form assuming n and q are positive:

$$\frac{(q+1)^2(q^2-q+1)\,q^{n(n+2)}(q^{2n}+q)}{(q^2+1)^2(q^4-q^2+1)(q^{4n+2}+1)}$$

Series expansion at q = 0:

$$\frac{q^{n(n+2)}\left(q^{2n}(1+q-q^2+2q^4+O(q^6))+(q+q^2-q^3+2q^5+O(q^6))\right)}{q^{4n+2}+1}$$

Open code

- Big-O notation

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Series expansion at q = ∞:

$$\frac{q^{n(n+2)}\left(q^{2n}\left(\left(\frac{1}{q}\right)^4+\left(\frac{1}{q}\right)^5-\left(\frac{1}{q}\right)^6+\frac{2}{q^8}+O\left(\left(\frac{1}{q}\right)^9\right)\right)+\left(\left(\frac{1}{q}\right)^3+\left(\frac{1}{q}\right)^4-\left(\frac{1}{q}\right)^5+\frac{2}{q^7}+O\left(\left(\frac{1}{q}\right)^8\right)\right)\right)}{q^{4n+2}+1}$$

Open code

- Big-O notation

Derivative:

- Step-by-step solution

$$\frac{\partial}{\partial q}\left(\frac{q^{(n+1)^2}(1+q)(1+q^3)(1+q^{2n-1})}{(1+q^2)(1+q^6)(1+q^{4n+2})}\right) =$$

$$\left(q^{(n+1)^2}\left(-2(1+q)(1+q^3)(1+q^6)(q^{2n}+q)(q^{4n+2}+1)+3(1+q)(1+q^2)(1+q^6) q(q^{2n}+q)(q^{4n+2}+1)+(2n-1)(1+q)(1+q^2)(1+q^3)(1+q^6)(q^{4n+2}+1)q^{2n-2}+(1+q^2)(1+q^3)(1+q^6)(q^{2n-1}+1)(q^{4n+2}+1)+\frac{(n+1)^2(1+q)(1+q^2)(1+q^3)(1+q^6)(q^{2n-1}+1)(q^{4n+2}+1)}{q} - 6(1+q)(1+q^2)(1+q^3)q^4(q^{2n}+q)(q^{4n+2}+1) - (4n+2)(1+q)(1+q^2)(1+q^3)(1+q^6)(q^{2n}+q)q^{4n}\right)\right) / \left((1+q^2)^2(1+q^6)^2(q^{4n+2}+1)^2\right)$$

(((0.5^((2+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1))) / (((1+0.5^2)(1+0.5^6)(1+0.5^(4*2+2)))

Input:

$$\frac{0.5^{(2+1)^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^6)(1+0.5^{4\times 2+2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.0029178236397748592870544090056285178236397748592870544 09...

Open code

And:

((((1/ [(((0.5^((2+1)^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1))) / (((1+0.5^2)(1+0.5^6)(1+0.5^(4*2+2)))]))))^1/12

Input:

$$\frac{1}{\sqrt[12]{\frac{0.5^{(2+1)^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^6)(1+0.5^{4\times 2+2})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits

- More digits
  1.626466340780163593638612165762027495649003143785797016679...

1.6264663407801635936386121657620274956490031437857970

This result is a golden number

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{10+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{5+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{11+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{\dots}}}}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\frac{4864278909\,\pi}{9395572784} \approx 1.6264663407801635936456 43$$

root of $265x^4 + 3462x^3 - 3530x^2 - 4950x + 639$ near $x = 1.62647$ ≈

1.626466340780163593636 9544

root of $38x^5 - 7x^4 + 317x^3 - 805x^2 + 728x - 802$ near $x = 1.62647$ ≈

1.626466340780163593 58997

(1.6264663407801635936*9395572784)/4864278909

Input interpretation:

$$\frac{1.6264663407801635936 \times 9395572784}{4864278909}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  3.141592653589793238374480837648859414940262834340694258080...

3.141592653589793238374480837648859414940262834340694258080

Now:

$$U_0(q) = \sum_{n\geq 0} \frac{q^{n^2}(-q;q^2)_n}{(-q^4;q^4)_n}$$

Sum_{n >= 0}

q^(n^2) (1+q)(1+q^3)...(1+q^(2n-1))/((1+q^4)(1+q^8)...(1+q^(4n))).

sum q^(n^2) (1+q)(1+q^3)(1+q^(2n-1))/((1+q^4)(1+q^8)(1+q^(4n))), n = 0 to 5

Result:

$$\sum_{n=0}^{5} \frac{q^{n^2}(1+q)(1+q^3)(1+q^{2n-1})}{(1+q^4)(1+q^8)(1+q^{4n})} = \frac{1}{2(q^4+1)^2(q^8+1)^2}$$
$$(q+1)(q^3+1)\left(2(q+1)(q^8+1)q + \left(\frac{1}{q}+1\right)(q^4+1)(q^8+1) + 2(q^3+1)(q^4+1)q^4 + \frac{2(q^4+1)(q^7+1)(q^8+1)q^{16}}{q^{16}+1} + \frac{2(q^5+1)(q^8+1)q^9}{q^8-q^4+1} + \frac{2(q^4+1)(q^8+1)(q^9+1)q^{25}}{q^{20}+1}\right)$$

Open code

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Sum:

$$\sum_{n=0}^{5} \frac{(q+1)(q^3+1)q^{n^2}(q^{2n-1}+1)}{(q^4+1)(q^8+1)(q^{4n}+1)} =$$
$$\frac{(q+1)(q^3+1)^2 q^4}{(q^4+1)(q^8+1)^2} + \frac{(q+1)^2(q^3+1)q}{(q^4+1)^2(q^8+1)} + \frac{\left(\frac{1}{q}+1\right)(q+1)(q^3+1)}{2(q^4+1)(q^8+1)} + \frac{(q+1)(q^3+1)(q^7+1)q^{16}}{(q^4+1)(q^8+1)(q^{16}+1)} + \frac{(q+1)(q^3+1)(q^9+1)q^{25}}{(q^4+1)(q^8+1)(q^{20}+1)} + \frac{(q+1)(q^3+1)(q^5+1)q^9}{(q^4+1)(q^8+1)(q^{12}+1)}$$

Open code

sum 0.5^(n^2) (1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^4)(1+0.5^8)(1+0.5^(4n))), n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(1+0.5)(1+0.5^3)0.5^{n^2}(0.5^{2n-1}+1)}{(1+0.5^4)(1+0.5^8)(0.5^{4n}+1)} = \frac{4289088487767912062955}{1190142788577664467008}$$

Open code

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Decimal approximation:

- More digits

3.6038436134993406041483474973972552687955656190634243565...
Open code

(((((27*3+2)/25*sum 0.5^(n^2) (1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^4)(1+0.5^8)(1+0.5^(4n))), n = 0 to 5))))^3

Input interpretation:

$$\left(\left(\frac{1}{25}(27\times 3+2)\right)\sum_{n=0}^{5} 0.5^{n^2}(1+0.5)(1+0.5^3)\times\frac{1+0.5^{2n-1}}{(1+0.5^4)(1+0.5^8)(1+0.5^{4n})}\right)^3$$

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Result:

1712.82

[((((((((27*3+2)/25*sum 0.5^(n^2) (1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^4)(1+0.5^8)(1+0.5^(4n))), n = 0 to 5))))^3)))]^1/3

Input interpretation:

$$\sqrt[3]{\left(\left(\frac{1}{25}(27\times 3+2)\right)\sum_{n=0}^{5} 0.5^{n^2}(1+0.5)(1+0.5^3)\times\frac{1+0.5^{2n-1}}{(1+0.5^4)(1+0.5^8)(1+0.5^{4n})}\right)^3}$$

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Result:

11.9648

This result is very near to the value of black hole entropy 12,1904

2*[((((((((27*3+2)/25*sum 0.5^(n^2) (1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^4)(1+0.5^8)(1+0.5^(4n))), n = 0 to 5))))^3)))]^1/3

Input interpretation:

$$2\sqrt[3]{\left(\left(\frac{1}{25}(27\times 3+2)\right)\sum_{n=0}^{5} 0.5^{n^2}(1+0.5)(1+0.5^3)\times\frac{1+0.5^{2n-1}}{(1+0.5^4)(1+0.5^8)(1+0.5^{4n})}\right)^3}$$

Enlarge Data Customize A Plaintext Interactive

Result:

23.9295

This result is very near to the value of black hole entropy 23.90

[((((((((27*3+2)/25*sum 0.5^(n^2) (1+0.5)(1+0.5^3)(1+0.5^(2n-1))/((1+0.5^4)(1+0.5^8)(1+0.5^(4n))), n = 0 to 5))))^3)))]^1/15

Input interpretation:

$$\sqrt[15]{\left(\left(\frac{1}{25}(27\times 3+2)\right)\sum_{n=0}^{5} 0.5^{n^2}(1+0.5)(1+0.5^3)\times\frac{1+0.5^{2n-1}}{(1+0.5^4)(1+0.5^8)(1+0.5^{4n})}\right)^3}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64279

1.64279 is very near to the value of $\zeta(2) = \pi^2/6 = 1.6449...$

Then:

(((q^(n^2)(1+q)(1+q^3)(1+q^(2n-1)))/(((1+q^4)(1+q^8)(1+q^(4n)))

Input:

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

Open code

Enlarge Data Customize A Plaintext Interactive

Values:

n	
0	$\frac{\left(\frac{1}{q}+1\right)(q+1)(q^3+1)}{2(q^4+1)(q^8+1)}$
1	$\frac{q(q+1)^2(q^3+1)}{(q^4+1)^2(q^8+1)}$
2	$\frac{q^4(q+1)(q^3+1)^2}{(q^4+1)(q^8+1)^2}$
3	$\frac{q^9(q+1)(q^3+1)(q^5+1)}{(q^4+1)(q^8+1)(q^{12}+1)}$

Alternate form:

$$\frac{(q+1)^2(q^2-q+1)q^{n^2-1}(q^{2n}+q)}{(q^4+1)(q^8+1)(q^{4n}+1)}$$

Expanded form:

- Step-by-step solution

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

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Real roots:

- Exact forms
- More digits

$n = m+1, \quad q = -1, \quad m^2+4m \in \mathbb{Z}, \quad m^2+2m \in \mathbb{Z}, \quad 4m \in \mathbb{Z}, \quad m \in \mathbb{Z}$

Open code

$n > 0.5\,, \quad q = 0$

Integer root:

$q = -1$

Open code

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Roots for the variable q:

- Step-by-step solution

$q = -1$

Open code

$q = \sqrt[3]{-1}$

$q = -(-1)^{2/3}$

$q = (-1)^{-1/(2n-1)}$

Series expansion at q = 0:

$$\frac{q^{n^2}\left(q^{2n}+q\right)\left(\frac{1}{q}+1+q^2-q^4+O\left(q^5\right)\right)}{q^{4n}+1}$$

Open code

- Big-O notation

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Series expansion at q = ∞:

$$\frac{q^{n^2}\left(q^{2n}+q\right)\left(\left(\frac{1}{q}\right)^9+\left(\frac{1}{q}\right)^{10}+\left(\frac{1}{q}\right)^{12}-\left(\frac{1}{q}\right)^{14}-\left(\frac{1}{q}\right)^{16}-\left(\frac{1}{q}\right)^{17}+O\left(\left(\frac{1}{q}\right)^{25}\right)\right)}{q^{4n}+1}$$

Open code

- Big-O notation

Derivative:

- Step-by-step solution

$$\frac{\partial}{\partial q}\left(\frac{q^{n^2}(1+q)(1+q^3)(1+q^{2n-1})}{(1+q^4)(1+q^8)(1+q^{4n})}\right)=$$

$$\left(q^{n^2}\left(\frac{n^2(1+q)(1+q^3)(1+q^4)(1+q^8)(q^{2n}+q)(1+q^{4n})}{q^2}+\right.\right.$$
$$3(1+q)(1+q^4)(1+q^8)q(q^{2n}+q)(1+q^{4n})+$$
$$(2n-1)(1+q)(1+q^3)(1+q^4)(1+q^8)(1+q^{4n})q^{2n-2}+$$
$$(1+q^3)(1+q^4)(1+q^8)(q^{2n-1}+1)(1+q^{4n})-4(1+q)(1+q^3)(1+q^8)q^2$$
$$(q^{2n}+q)(1+q^{4n})-8(1+q)(1+q^3)(1+q^4)q^6(q^{2n}+q)(1+q^{4n})-$$
$$\left.\left.4n(1+q)(1+q^3)(1+q^4)(1+q^8)(q^{2n}+q)q^{4n-2}\right)\right)/$$
$$\left((1+q^4)^2(1+q^8)^2(1+q^{4n})^2\right)$$

For q = 0,5 and n = 2, we obtain:

(((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))/(((1+0.5^4)(1+0.5^8)(1+0.5^(4*2)))

Input:

$$\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^4)(1+0.5^8)(1+0.5^{4\times2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.110805435892960039471586602816269204770433359190547481237...

1 / ((((([(((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))/(((1+0.5^4)(1+0.5^8)(1+0.5^(4*2)))]))))^1/4

Input:

$$\frac{1}{\sqrt[4]{\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^4)(1+0.5^8)(1+0.5^{4\times2})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1.733244111338517103315069811787548605396295692557710550305...

1/2 * [((((((((1 / [(((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))/(((1+0.5^4)(1+0.5^8)(1+0.5^(4*2)))]))))^1/5))))] +1.7332441113385171033))))

Input interpretation:

$$\frac{1}{2}\left(\frac{1}{\sqrt[5]{\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^4)(1+0.5^8)(1+0.5^{4\times 2})}}}+1.7332441113385171033\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1.642972473414248159524389175683432397300064819460733440825...

1.6429724734142481595243891756834323973000648194607334

is very near to the value of $\zeta(2) = \pi^2/6 = 1.6449...$

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{44+\cfrac{1}{41+\cfrac{1}{2+\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{8+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{19+\cfrac{1}{1+\cfrac{1}{\cdots}}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\frac{4525961533\,\pi}{8654270070} \approx 1.64297247341424815945293$$

$$\frac{1}{200}\left(48\,e^{\pi} - 213\,\pi + 2063\log(\pi) - 1253\log(2\,\pi) - 136\tan^{-1}(\pi)\right) \approx$$
$$1.64297247341424815945204$$

$$\frac{-551 - 204\,e + 413\,e^2}{4\left(-101 - 17\,e + 60\,e^2\right)} \approx 1.64297247341424815916355$$

(1.6429724734142481595*8654270070)/4525961533

Input interpretation:

$$\frac{1.6429724734142481595 \times 8654270070}{4525961533}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

3.141592653589793238376035522748222173190971307356005316715...

3.141592653589793238376035522748222173190971307356005316715

From the four results, we obtain the following mean:

1/4 * (1.616953587550403225806451+1.621996449817778272583121+1.626466340780163593638612+1.642972473414248159524389)

Input interpretation:

$$\frac{1}{4}(1.616953587550403225806451 + 1.621996449817778272583121 + 1.626466340780163593638612 + 1.642972473414248159524389)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

1.627097212890648312888814325

1.627097212890648312888814325 this result is a golden number

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{7+\cfrac{1}{13+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{15+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{45+\cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\frac{10\sqrt{\frac{2660970}{10183879}}}{\pi} \approx 1.627097212890648363302$$

$$\frac{3418811179\,\pi}{6601026662} \approx 1.62709721289064831290552$$

$$\frac{2311583 - 16788\,\pi^2}{419802\,\pi} \approx 1.62709721289064831277120$$

(1.627097212890648312*6601026662)/3418811179

Input interpretation:

$$\frac{1.627097212890648312 \times 6601026662}{3418811179}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

3.141592653589793236714256848988734396553814474350061787954...

3.141592653589793236714256848988734396553814474350061787954

Now, from the sum of the four results, we obtain:

(1.616953587550403225806451+1.621996449817778272583121+1.626466340780163593638612+1.642972473414248159524389)^(e+1.2619)

where "e" is the Euler number and 1.2619 is a Hausdorff dimension

Input interpretation:

$$(1.616953587550403225806451 + 1.621996449817778272583121 + 1.626466340780163593638612 + 1.642972473414248159524389)^{e+1.2619}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1728.910105392591315967102785492505711099335938132036375855...

1728.9101053925913159671027854925057110993359381320363

This result is very near to the mass of candidate glueball f_0(1710) meson. Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–

Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729

Continued fraction:

- Linear form

$$1728+\cfrac{1}{1+\cfrac{1}{10+\cfrac{1}{8+\cfrac{1}{17+\cfrac{1}{1+\cfrac{1}{353+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{26+\cfrac{1}{1+\cfrac{1}{19+\cfrac{1}{1+\cfrac{1}{13+\cfrac{1}{1+\cfrac{1}{8+\cfrac{1}{\dots}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\pi \ \text{root of } x^5 - 549x^4 - 732x^3 + 281x^2 + 1053x + 641 \text{ near } x = 550.329 \approx 1728.910105392591315918484$$

$$\frac{2603651\pi}{3890} - \frac{6852523}{5835\pi} \approx 1728.910105392591315985733$$

$$\frac{-1635 + 267\sqrt{\pi} + 1138\pi + 3987\pi^{3/2} + 4110\pi^2}{12\pi} \approx 1728.910105392591315964178 7$$

Now:

(1728.91010539259131596710278549250571109933593813 20363)^1/3

Input interpretation:

$$\sqrt[3]{1728.9101053925913159671027854925057110993359381320363}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

12.00210635569632054668468576769281379172517114208153 4...

12.002106355696320546684685767692813791725171142081534

This result 12,0021 is very near to the value of black hole entropy 12,1904

2*(1728.9101053925913159671027854925057110993359381320363)^1/3

Input interpretation:

$$2\sqrt[3]{1728.9101053925913159671027854925057110993359381320363}$$

Open code

- Units »

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

24.004212711392641093369371535385627583450342284163069...

24.004212711392641093369371535385627583450342284163069

Continued fraction:

- Linear form

$$24+\cfrac{1}{237+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{7+\cfrac{1}{1+\cfrac{1}{610+\cfrac{1}{13+\cfrac{1}{1+\cfrac{1}{6+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{6+\cfrac{1}{3+\cfrac{1}{2+\cfrac{1}{5+\cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\pi \text{ root of } 674x^3 - 8113x^2 + 22490x + 1150 \text{ near } x = 7.64078 \approx$$

24.00421271139264110259

$$\text{root of } 283x^3 - 6107x^2 - 16966x + 11870 \text{ near } x = 24.0042 \approx$$

24.00421271139264111474

$$\frac{1875894986\,\pi}{245510985} \approx 24.00421271139264109428 25$$

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

Note that:

(1728.9101053925913159671027854925057110993359381320363)^1/15

Input interpretation:

$$\sqrt[15]{1728.9101053925913159671027854925057110993359381320363}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.64380953089987079003168388382053714856452123363991240...

1.64380953089987079003168388382053714856452123363991240

is very near to the value of $\zeta(2) = \pi^2/6 = 1.6449...$

From 1.6438095308997 * 3 = 4,9314285926991

4.9314285926996123700950516514616114456935637009197372

Continued fraction:

- Linear form

$$4+\cfrac{1}{1+\cfrac{1}{13+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{1534+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{9+\cfrac{1}{1+\cfrac{1}{10+\cfrac{1}{2+\cfrac{1}{27+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{\cdots}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

root of $4220x^3 - 21965x^2 - 7600x + 65552$ near $x = 4.93143$ ≈ 4.931428592699612369233

root of $100x^5 - 710x^4 + 925x^3 + 550x^2 + 599x + 990$ near $x = 4.93143$ ≈ 4.93142859269961237009580395

$$\frac{1}{\text{root of } 65552x^3 - 7600x^2 - 21965x + 4220 \text{ near } x = 0.202781} \approx$$

4.93142859269961236923

Where 4.93142859... is very near to the first value of upper bound dark photon energy range ($1.8 * 10^{15} – 4.95 * 10^{16} – 5.4 * 10^{16}$) (Physics Letters B 731 (2014) 265–271 - **Searching a dark photon with HADES**)

From the product of the results, we obtain:

(1.616953587550403225806451*1.621996449817778272583121*1.626466340780163593638612*1.642972473414248159524389)^(2*1.2619+1.3057)

Where 1.2619 and 1.3057 are Hausdorff dimensions

Input interpretation:

$$(1.616953587550403225806451 \times 1.621996449817778272583121 \times 1.626466340780163593638612 \times 1.642972473414248159524389)^{2\times 1.2619+1.3057}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1731.061879997675135109524574096610559864760525844826370122...

1731.0618799976751351095245740966105598647605258448263

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

We have that:

(1731.0618799976751351095245740966105598647605258448263)^1/3

Input interpretation:

$$\sqrt[3]{1731.0618799976751351095245740966105598647605258448263}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

12.007083503022478426187741052296711086819185061476107...

12.007083503022478426187741052296711086819185061476107

This result 12,007 is very near to the value of black hole entropy 12,1904

2*(1731.0618799976751351095245740966105598647605258448263)^1/3

Input interpretation:

$$2\sqrt[3]{1731.061879997675135109524574096610559864760525844826 3}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

24.01416700604495685237548210459342217363837012295221 3...

24.01416700604495685237548210459342217363837012295221 3

Continued fraction:

- Linear form

$$24+\cfrac{1}{70+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{15+\cfrac{1}{13+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{55+\cfrac{1}{3+\cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\pi \text{ root of } 397x^3+289x^2-16912x-64926 \text{ near } x=7.64395 \approx$$

24.01416700604495685 36240

$$\text{root of } 51x^5-1219x^4-119x^3-440x^2-40x-410 \text{ near } x=24.0142 \approx$$

24.01416700604495685 73623

$$\frac{1}{\text{root of } 410x^5+40x^4+440x^3+119x^2+1219x-51 \text{ near } x=0.0416421} \approx$$

24.01416700604495685 73623

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

Now:

(1731.0618799976751351095245740966105598647605258448263)^1/15

Input interpretation:

$\sqrt[15]{1731.0618799976751351095245740966105598647605258448263}$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.6439458423971481693133153254333434609064886190728717 46...

1.6439458423971481693133153254333434609064886190728717 46

is very near to the value of $\zeta(2) = \pi^2/6 = 1.6449...$

We have that:

1.6439458423971481693133153254333434609064886190728717 46 * 3

Result:

4.9318375271914445079399459763000303827194658572186152 38

4.9318375271914445079399459763000303827194658572186152 38

Continued fraction:

- Linear form

$$4+\cfrac{1}{1+\cfrac{1}{13+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{26+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{68+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{8+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}}$$

Open code

Possible closed forms:

- More

$$-\frac{2\,(6691\,C_{CR}-3000)}{11\,C_{CR}-3010} \approx 4.9318375271914445 12541$$

Enlarge Data Customize A Plaintext Interactive

root of $3241x^3 - 34765x^2 + 77336x + 75400$ near $x = 4.93184$ ≈

4.93183752719144450782336

$$\frac{5089603373\pi}{3242089886} \approx 4.9318375271914445079118267$$

- C_{CR} is the ratio of sides to base of Calabi's triangle

This value 4,9318375 is very near to the first value of upper bound dark photon energy range ($1.8 * 10^{15} – 4.95 * 10^{16} – 5.4 * 10^{16}$) (Physics Letters B 731 (2014) 265–271 - **Searching a dark photon with HADES**)

Now, we have also:

integrate [0.008748559907834101382488479262672811059907834101382488479]x x,[0, -tan1727*1.08753^11]

where 1.08753 is a result of Ramanujan mock theta function (see our previous papers)

Definite integral:

- Step-by-step solution

$$\int_0^{-\tan(1727°)\,1.08753^{11}} 0.008748559907834101382488479262672811059907834101382488479\, x\, x\, dx = 1.62689$$

Riemann sums:

- Fewer cases

left sum	$1.62689 + \frac{0.813447}{n^2} - \frac{2.44034}{n} = 1.62689 - \frac{2.44034}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$
midpoint sum	$1.62689 - \frac{0.406724}{n^2}$
right sum	$1.62689 + \frac{0.813447}{n^2} + \frac{2.44034}{n} = 1.62689 + \frac{2.44034}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$

1.62689

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{7+\cfrac{1}{1+\cfrac{1}{8+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{\ldots}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$\sqrt[4]{7} \approx 1.62657656$

$\frac{29\pi}{56} \approx 1.6268961956$

$\frac{25}{2} - 4e \approx 1.626872686$

Or:

integrate [0.00874855990783410138248847926267281105990783410138248847 9]x x,[0, -tan1728*1.0860^12]

Definite integral:

- Step-by-step solution

$$\int_0^{-\tan(1728°)\,1.0860^{12}} 0.008748559907834101382488479262672811059907834101382488479\, x\, x\, dx = 1.65715$$

Riemann sums:

- Fewer cases

left sum	$1.65715 + \frac{0.828573}{n^2} - \frac{2.48572}{n} = 1.65715 - \frac{2.48572}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$
midpoint sum	$1.65715 - \frac{0.414287}{n^2} = 1.65715 - \frac{0.414287}{n^2} + O\left(\left(\frac{1}{n}\right)^4\right)$
right sum	$1.65715 + \frac{0.828573}{n^2} + \frac{2.48572}{n} = 1.65715 + \frac{2.48572}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$

1.65715

Where 1.62689 and 1.65715 are golden numbers. Furthermore 1,65715 is very near to the 14th root of the following Ramanujan's class invariant $Q = \left(G_{505}/G_{101/5}\right)^3 = 1164{,}2696$ i.e. 1,65578...

- Continued fraction:
  Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{11+\cfrac{1}{114+\cfrac{1}{\ldots}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

- Possible closed forms:
  More

$\frac{58}{35} \approx 1.657142857$

$\frac{2}{\log^2(3)} \approx 1.65707089$

$\sqrt{-\frac{11 M}{7}} \approx 1.6571580897$

- $\log(x)$ is the natural logarithm
- M is the Madelung constant

We note that 1.65715 * 3 = 4.97145.

This value 4,97145 is very near to the first value of upper bound dark photon energy range ($1.8 * 10^{15} – 4.95 * 10^{16} – 5.4 * 10^{16}$) (Physics Letters B 731 (2014) 265–271 - **Searching a dark photon with HADES**)

- Continued fraction:
  Linear form

$$4+\cfrac{1}{1+\cfrac{1}{34+\cfrac{1}{38+\cfrac{1}{\ldots}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

- Possible closed forms:
  More

$-e! - 3 + \frac{9e}{2} \approx 4.971447751$

$\frac{174}{35} \approx 4.971428571$

$3\sqrt{-\frac{11 M}{7}} \approx 4.971474269$

integrate [-0.38010204081632653061224489 7]x x,[0, tan1733]

Definite integral:

- Step-by-step solution
  $$\int_0^{\tan(1733^\circ)} -0.380102040816326530612244897\, x\, x\, dx = 1.65662$$

Riemann sums:

- Fewer cases

left sum	$\frac{0.828310495119397087715156 21}{n^2} - \frac{2.48493148535819126314546863}{n} + 1.6566209902387941754303124 2 = 1.6566209902387941754303124 2 - \frac{2.48493148535819126314546863}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$
midpoint sum	$-\frac{0.414155247559698543857578 1}{n^2} + \frac{0.\times 10^{-26}}{n} + 1.656620990238794175430312 4 = 1.656620990238794175430312 4 - \frac{0.414155247559698543857578 1}{n^2} + O\left(\left(\frac{1}{n}\right)^4\right)$
right sum	$\frac{0.828310495119397087715156 21}{n^2} + \frac{2.48493148535819126314546863}{n} + 1.6566209902387941754303124 2 = 1.6566209902387941754303124 2 + \frac{2.48493148535819126314546863}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$

1.65662

where 1,65662 is very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164{,}2696$ i.e. 1,65578...

Continued fraction:

- Linear form
  $$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{10+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{\cdots}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

More

$$\sqrt{\frac{\pi}{\log(\pi)}} \approx 1.6566220046$$

$$\frac{2(1+\pi)}{5} \approx 1.656637061$$

$$-\frac{2e}{e-6} \approx 1.6566211273$$

We note that 1.65662 * 3 = 4.96986

This value 4,96986 is very near to the first value of upper bound dark photon energy range ($1.8 * 10^{15} – 4.95 * 10^{16} – 5.4 * 10^{16}$) (Physics Letters B 731 (2014) 265–271 - **Searching a dark photon with HADES**)

Continued fraction:

Linear form

$$4+\cfrac{1}{1+\cfrac{1}{32+\cfrac{1}{5+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{17+\cfrac{1}{\ldots}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

More

$$3\sqrt{\frac{\pi}{\log(\pi)}} \approx 4.9698660139$$

$$\frac{164}{33} \approx 4.96969696$$

$$e^{1+1/(2\pi)}\sqrt{\pi \sin(e\,\pi)} \approx 4.969857446$$

integrate [0.002917823639774859287054409]x x,[0, -tan1729*1.08663428^17]

where 1.08663428 is a mean of the some results of Ramanujan mock theta function (see our previous papers)

Definite integral:

Step-by-step solution

$$\int_0^{-\tan(1729°)\,1.08663428^{17}} 0.0029178236397748592870544 09\, x\, x\, dx = 1.64921$$

Riemann sums:

- Fewer cases

left sum	$1.64921 + \frac{0.824605}{n^2} - \frac{2.47381}{n} = 1.64921 - \frac{2.47381}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$
midpoint sum	$1.64921 - \frac{0.412302}{n^2}$
right sum	$1.64921 + \frac{0.824605}{n^2} + \frac{2.47381}{n} = 1.64921 + \frac{2.47381}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$

$$1.64921 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

Continued fraction:

- Linear form

$$1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{5 + \cfrac{1}{1 + \cfrac{1}{2 + \cfrac{1}{3 + \cfrac{1}{5 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{2 + \cfrac{1}{2 + \cfrac{1}{\ldots}}}}}}}}}}}}}$$

Open code

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Possible closed forms:

- More

$\frac{21\pi}{40} \approx 1.64933614$

$\frac{5}{4}\pi\,\text{sech}^2(1) \approx 1.649235382$

$\frac{20\gamma}{7} \approx 1.64918761$

•

γ is the Euler-Mascheroni constant

$\text{sech}(x)$ is the hyperbolic secant function

We note that 1.64921 * 3 = 4.94763

Continued fraction:

- Linear form

$$4+\cfrac{1}{1+\cfrac{1}{18+\cfrac{1}{10+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{6+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{\dots}}}}}}}}}}}$$

Open code

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Possible closed forms:

- More

$\frac{7\pi}{2} - \frac{19}{\pi} \approx 4.947686450$

$7\,C_T + \frac{1}{5} \approx 4.947641443$

$13\,\lambda + 1 \approx 4.947619037$

This value 4,94763 is very near to the first value of upper bound dark photon energy range (1.8 * 10^{15} – 4.95 * 10^{16} – 5.4 * 10^{16}) (Physics Letters B 731 (2014) 265–271 - **Searching a dark photon with HADES**)

integrate [0.11080543589296003947158660]x x,[0, -tan1727*1.08753454]

Definite integral:

- Step-by-step solution

$$\int_0^{-\tan(1727^\circ)\,1.08753454} 0.11080543589296003947158660\,x\,x\,dx = 1.66246$$

Or

integrate [0.11080543589296003947158660]x x,[0, -tan1727*1.08663428]

Definite integral:

- Step-by-step solution

$$\int_0^{-\tan(1727^\circ)\,1.08663428} 0.11080543589296003947158660\,x\,x\,dx = 1.65834$$

Riemann sums:

- Fewer cases

left sum	$1.65834 + \frac{0.829169}{n^2} - \frac{2.48751}{n} = 1.65834 - \frac{2.48751}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$
midpoint sum	$1.65834 - \frac{0.414584}{n^2}$
right sum	$1.65834 + \frac{0.829169}{n^2} + \frac{2.48751}{n} = 1.65834 + \frac{2.48751}{n} + O\left(\left(\frac{1}{n}\right)^2\right)$

1.65834 is very near to the 14th root of the following Ramanujan's class invariant $Q = \left(G_{505}/G_{101/5}\right)^3 = 1164{,}2696$ i.e. 1,65578...

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{12+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{10+\cfrac{1}{13+\cfrac{1}{\cdots}}}}}}}}}$$

Open code

Possible closed forms:

$5\pi - 2\sqrt{5}\,\pi \approx 1.658333805$

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$\frac{\sqrt{11}}{2} \approx 1.658312395$

$\sqrt{\frac{2}{5}}\,L \approx 1.658334805$

- L is the lemniscate constant

We have that 1.65834 * 3 = 4.97502

Continued fraction:

- Linear form

$$4+\cfrac{1}{1+\cfrac{1}{39+\cfrac{1}{31+\cfrac{1}{4+\cfrac{1}{2+\cfrac{1}{\cdots}}}}}}$$

Open code

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Possible closed forms:

- More

$\frac{199}{40} \approx 4.975000000$

$$\frac{e(4+e)}{-1-e+e^2} \approx 4.9750221798$$

$$\frac{4}{3} e^{3/2} \sqrt{\log(2)} \approx 4.975001201$$

This value 4,97502 is very near to the first value of upper bound dark photon energy range ($1.8 * 10^{15} - 4.95 * 10^{16} - 5.4 * 10^{16}$) (Physics Letters B 731 (2014) 265–271 - **Searching a dark photon with HADES**)

The mean of the four results of the integrals is:

(1.65715 + 1.65662 + 1.64921 + 1.65834) / 4

Input interpretation:

$$\frac{1}{4}(1.65715 + 1.65662 + 1.64921 + 1.65834)$$

Open code

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Result:

1.65533

1.65533

Continued fraction:

- Linear form

$$1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{9 + \cfrac{1}{7 + \cfrac{1}{2 + \cfrac{1}{3 + \cfrac{1}{1 + \cfrac{1}{4 + \cfrac{1}{3 + \cfrac{1}{\dots}}}}}}}}}}}$$

Open code

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Possible closed forms:

- More

$$1 - \frac{3M}{8} \approx 1.6553367229$$

$$\frac{26}{5\pi} \approx 1.65521140$$

$$\frac{10 G_g}{7} \approx 1.655326390$$

- M is the Madelung constant
- G_g is the tether length at which a goat tied to the boundary of a unit circular field can graze exactly half the field

We have that 1.65533 * 3 = 4.96599

Continued fraction:
- Linear form

$$4+\cfrac{1}{1+\cfrac{1}{28+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{12+\cfrac{1}{2+\cfrac{1}{3+\cfrac{1}{3+\cfrac{1}{\dots}}}}}}}}}$$

Open code

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Possible closed forms:
- More

$$\frac{144}{29} \approx 4.96551724$$

$$\frac{30\,G_g}{7} \approx 4.965979170$$

$$\mathcal{P}_{pen} + 3 \approx 4.965948236$$

- G_g is the tether length at which a goat tied to the boundary of a unit circular field can graze exactly half the field
- $\mathcal{P}_{pen}$ is the pentanacci constant

This value 4,96599 is very near to the first value of upper bound dark photon energy range ($1.8 * 10^{15} – 4.95 * 10^{16} – 5.4 * 10^{16}$) (Physics Letters B 731 (2014) 265–271 - **Searching a dark photon with HADES**)

The final result is 1,65533 practically equal to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3$ = 1164,2696 i.e. 1,65578...

$$\sqrt[14]{\left(\sqrt{\frac{113+5\sqrt{505}}{8}}+\sqrt{\frac{105+5\sqrt{505}}{8}}\right)^3} = 1,65578\ldots$$

From the mean value 1.65533 * 11 we obtain:

18.20863

Continued fraction:

- Linear form

$$18+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{5+\cfrac{1}{16+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\frac{1}{\cdots}}}}}}}}}}}$$

Open code

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Possible closed forms:

- More

$$\frac{59\,b_4(2)}{2}+100\approx 18.2086326939$$

$$-9+\frac{46}{\pi}+4\pi\approx 18.208625378$$

$$\frac{1733\,\pi}{299}\approx 18.208628992$$

-

This result 18,2086 is very near to the value of black hole entropy 18,2773.

Now, we have (mock theta functions order 8):

$$S_0(q)=\sum_{n\geq 0}\frac{q^{n^2}(-q;q^2)_n}{(-q^2;q^2)_n}$$ (sequence A153148 in the OEIS)

$$S_1(q)=\sum_{n\geq 0}\frac{q^{n(n+2)}(-q;q^2)_n}{(-q^2;q^2)_n}$$ (sequence A153149 in the OEIS)

$$T_0(q)=\sum_{n\geq 0}\frac{q^{(n+1)(n+2)}(-q^2;q^2)_n}{(-q;q^2)_{n+1}}$$ (sequence A153155 in the OEIS)

$$T_1(q)=\sum_{n\geq 0}\frac{q^{n(n+1)}(-q^2;q^2)_n}{(-q;q^2)_{n+1}}$$ (sequence A153156 in the OEIS)

For q = 0.5 and n =2, we obtain for $S_0(q)$:

Sum_{n >= 0} q^(n^2)(1+q)(1+q^3)...(1+q^(2n-1))/(1+q^2)(1+q^4)...(1+q^(2n)).

sum q^(n^2)(1+q)(1+q^3)(1+q^(2n-1))* 1/((1+q^2)(1+q^4)(1+q^(2n))), n = 0 to 5

Result:

$$\sum_{n=0}^{5} \frac{q^{n^2}(1+q)(1+q^3)(1+q^{2n-1})}{(1+q^2)(1+q^4)(1+q^{2n})} = \frac{1}{2(q^2+1)^2(q^4+1)^2}$$
$$(q+1)(q^3+1)\left(2(q+1)(q^4+1)q + \left(\frac{1}{q}+1\right)(q^2+1)(q^4+1) + 2(q^2+1)(q^3+1)q^4 + \frac{2(q^2+1)(q^4+1)(q^9+1)q^{25}}{q^{10}+1} + \frac{2(q^2+1)(q^4+1)(q^7+1)q^{16}}{q^8+1} + \frac{2(q^2+1)(q^4+1)(q^5+1)q^9}{q^6+1}\right)$$

Open code

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Sum:

$$\sum_{n=0}^{5} \frac{(q+1)(q^3+1)q^{n^2}(q^{2n-1}+1)}{(q^2+1)(q^4+1)(q^{2n}+1)} =$$
$$\frac{(q+1)(q^3+1)^2 q^4}{(q^2+1)(q^4+1)^2} + \frac{(q+1)^2(q^3+1)q}{(q^2+1)^2(q^4+1)} + \frac{\left(\frac{1}{q}+1\right)(q+1)(q^3+1)}{2(q^2+1)(q^4+1)} + \frac{(q+1)(q^3+1)(q^9+1)q^{25}}{(q^2+1)(q^4+1)(q^{10}+1)} + \frac{(q+1)(q^3+1)(q^7+1)q^{16}}{(q^2+1)(q^4+1)(q^8+1)} + \frac{(q+1)(q^3+1)(q^5+1)q^9}{(q^2+1)(q^4+1)(q^6+1)}$$

Open code

sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))* 1/((1+0.5^2)(1+0.5^4)(1+0.5^(2n))), n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(1+0.5)(1+0.5^3)\,0.5^{n^2}(0.5^{2n-1}+1)}{(1+0.5^2)(1+0.5^4)(0.5^{2n}+1)} = \frac{57177775264014927}{20755255918592000}$$

Open code

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Decimal approximation:

- More digits
  2.754857636460006923978015191294304473666175863704887316855...

Open code

[(((sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))* 1/((1+0.5^2)(1+0.5^4)(1+0.5^(2n))), n = 0 to 5)))]^1/2

Input interpretation:

$$\sqrt{\sum_{n=0}^{5} 0.5^{n^2}(1+0.5)(1+0.5^3)\left((1+0.5^{2n-1}) \times \frac{1}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}\right)}$$

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Result:

1.65978

1.65978 is very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164{,}2696$ i.e. 1,65578...

24*3 + 10^3*[(((sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))* 1/((1+0.5^2)(1+0.5^4)(1+0.5^(2n))), n = 0 to 5)))]^1/2

nput interpretation:

$$24\times 3 + 10^3 \sqrt{\sum_{n=0}^{5} 0.5^{n^2} (1+0.5)(1+0.5^3)\left((1+0.5^{2n-1})\times \frac{1}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}\right)}$$

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Result:

1731.78

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

(((((((24*3 + 10^3*[(((sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))* 1/((1+0.5^2)(1+0.5^4)(1+0.5^(2n))), n = 0 to 5)))]^1/2)))))))^1/3

Input interpretation:

$$\left(24\times 3 + 10^3 \sqrt{\sum_{n=0}^{5} 0.5^{n^2} (1+0.5)(1+0.5^3)\left((1+0.5^{2n-1})\times \frac{1}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}\right)}\right)^{(1/3)}$$

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Result:

12.0087

This result is very near to the value of black hole entropy 12,1904

2(((((((24*3 + 10^3*[(((sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))* 1/((1+0.5^2)(1+0.5^4)(1+0.5^(2n))), n = 0 to 5)))]^1/2)))))))^1/3

Input interpretation:

$$2\left(24\times 3+10^3 \sqrt{\sum_{n=0}^{5} 0.5^{n^2} (1+0.5)(1+0.5^3)\left((1+0.5^{2n-1})\times \frac{1}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}\right)}\right)^{\wedge}(1/3)$$

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Result:

24.0175

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

(((((((24*3 + 10^3*[(((sum 0.5^(n^2)(1+0.5)(1+0.5^3)(1+0.5^(2n-1))* 1/((1+0.5^2)(1+0.5^4)(1+0.5^(2n))), n = 0 to 5)))]^1/2)))))))^1/15

Input interpretation:

$$\left(24\times 3+10^3 \sqrt{\sum_{n=0}^{5} 0.5^{n^2} (1+0.5)(1+0.5^3)\left((1+0.5^{2n-1})\times \frac{1}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}\right)}\right)^{\wedge}(1/15)$$

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Result:

1.64399

$1.64399 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Then:

((((q^(n^2)(1+q)(1+q^3)(1+q^(2n-1)))) / ((((1+q^2)(1+q^4)(1+q^(2n))))

Input:

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

Open code

Series expansion at q = 0:

$$\frac{q^{n^2}\left(q^{2n}+q\right)\left(\frac{1}{q}+1-q+q^3-q^4+O\left(q^5\right)\right)}{q^{2n}+1}$$

Open code

- Big-O notation

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Series expansion at q = ∞:

$$\frac{q^{n^2}\left(q^{2n}+q\right)\left(\left(\frac{1}{q}\right)^3+\left(\frac{1}{q}\right)^4-\left(\frac{1}{q}\right)^5+\left(\frac{1}{q}\right)^7-\left(\frac{1}{q}\right)^8-\left(\frac{1}{q}\right)^9+\left(\frac{1}{q}\right)^{11}+\left(\frac{1}{q}\right)^{12}+O\left(\left(\frac{1}{q}\right)^{13}\right)\right)}{q^{2n}+1}$$

Open code

- Big-O notation

Derivative:

- Step-by-step solution

$$\frac{\partial}{\partial q}\left(\frac{q^{n^2}(1+q)\left(1+q^3\right)\left(1+q^{2n-1}\right)}{\left(1+q^2\right)\left(1+q^4\right)\left(1+q^{2n}\right)}\right)=$$

$$\left((1+q)q^{n^2-2}\left(n^2\left(q^9+q^7+q^6+q^5+q^4+\left(1+q^3\right)+q^2\right)\left(q^{2n}+q\right)\left(1+q^{2n}\right)+q^{2n+1}-3q^{2n+2}+q^{2n+3}-q^{2n+4}-3q^{2n+5}-5q^{2n+6}-7q^{2n+7}-4q^{2n+9}+q^{4n+1}-4q^{4n+2}+4q^{4n+3}-6q^{4n+4}+2q^{4n+5}-8q^{4n+6}-q^{4n+8}-3q^{4n+9}-q^{4n}-q^{2n}-2q^{2(n+5)}-2n\left(q^{10}-q^9+q^8-q^2+q-1\right)q^{2n}-2q^{10}-q^9+q^8-7q^7+3q^6-5q^5+5q^4-3q^3+q^2\right)\right)\Big/\left(\left(1+q^2\right)^2\left(1+q^4\right)^2\left(1+q^{2n}\right)^2\right)$$

((((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))) / ((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))

Input:

$$\frac{0.5^{2^2}(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times2-1}\right)}{\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times2}\right)}$$

Open code

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Result:

- More digits

0.0840830449826989619377162629757785467128027681660899653 97...

Open code

2Pi^2((((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))) / ((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))

Input:

$$2\pi^2 \times \frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}$$

Open code

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Result:

- Fewer digits
- More digits

1.659732781636480376731336548768100156319189588899316347556...

1.6597327816364803767313365487681001563191895888993163

is very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164{,}2696$ i.e. 1,65578...

Series representations:

- More

$$\frac{(2\pi^2)\left(0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})\right)}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})} = 2.69066\left(\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\right)^2$$

Open code

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$$\frac{(2\pi^2)\left(0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})\right)}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})} = 0.672664\left(-1+\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}\right)^2$$

Open code

$$\frac{(2\pi^2)\left(0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})\right)}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})} = 0.168166\left(\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}\right)^2$$

Integral representations:

- More

$$\frac{(2\pi^2)\left(0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})\right)}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})} = 0.672664\left(\int_0^{\infty}\frac{1}{1+t^2}\,dt\right)^2$$

Open code

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$$\frac{(2\pi^2)\left(0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})\right)}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})} = 2.69066\left(\int_0^{1}\sqrt{1-t^2}\,dt\right)^2$$

Open code

$$\frac{(2\pi^2)\left(0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})\right)}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})} = 0.672664\left(\int_0^\infty \frac{\sin(t)}{t}\,dt\right)^2$$

96/5((((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))) / ((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))

Input:

$$\frac{96}{5} \times \frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.6143944636678200692041522491349480968858131487889273356 40...

1.614394463667820069204152249134948096885813148788927335640

This result is a golden number, near to the value of golden ratio

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{5+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{\ldots}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$\frac{7776\, \mathcal{W}_{\text{Wad}}}{1445} \approx$ 1.61439446366782006920415224913494809688581314878892733564013840

$\frac{11664}{7225} \approx$ 1.61439446366782006920415224913494809688581314878892733564013840

$\frac{1755691273\,\pi}{3416554584} \approx$ 1.6143944636678200691797 4

-

exp((((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))) / ((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))

Input:

$$\exp\left(\frac{0.5^{2^2}\,(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2-1}\right)}{\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1.0877192196819987775161540198071337264480113151893677008 07...

1.087719219681998777516154019807133726448011315189367 7

(((((exp((((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))) / ((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2)))))))))^6

Input:

$$\exp^6\left(\frac{0.5^{2^2}\,(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2-1}\right)}{\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1.656154369467837212509803842711975818427745850601446717495...

1.6561543694678372125098038427119758184277458506014467

is very near to the 14th root of the following Ramanujan's class invariant $Q = \left(G_{505}/G_{101/5}\right)^3 = 1164,2696$ i.e. 1,65578...

(15.8174+22.6589) * integrate (((((((((((((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))) / ((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))))))))))x

Input interpretation:

$$(15.8174+22.6589)\int\frac{0.5^{2^2}\,(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2-1}\right)}{\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}\,x\,dx$$

Open code

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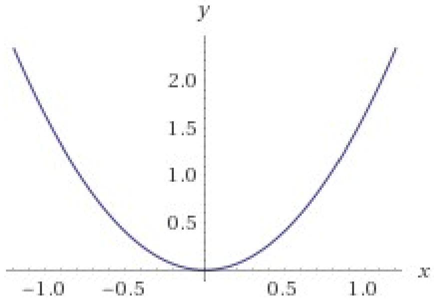
Result:

$1.6176\,x^2$

Plot:



(x from -1.2 to 1.2)

Open code

1.6176 x^2 for x = 1

Input interpretation:

$1.6176\,x^2$ where $x = 1$

Open code

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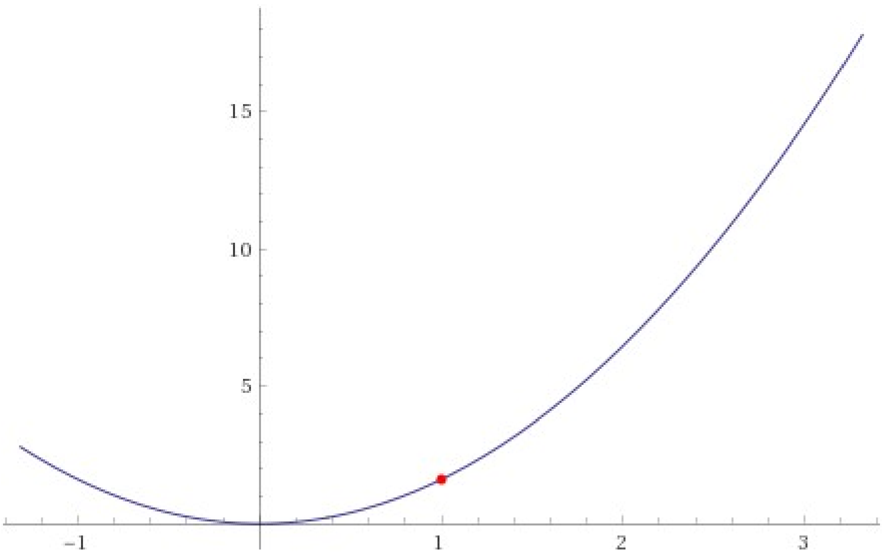
Result:

1.6176

1.6176.

This result is a very good approximation to the value of the golden ratio 1,618033988749...

Plot:



(x from -1.3 to 3.3)

12* colog ((((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))) / ((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))

Input:

$$12\left(-\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

29.7114...

29.7114…

This result is very near to the value of black hole entropy 29.7668

Series representations:

- More

$$12(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right)=12\sum_{k=1}^{\infty}\frac{(-1)^k(-0.915917)^k}{k}$$

Open code

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$$12(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right)=$$
$$-24i\pi\left\lfloor\frac{\arg(0.084083-x)}{2\pi}\right\rfloor-12\log(x)+12\sum_{k=1}^{\infty}\frac{(-1)^k(0.084083-x)^k x^{-k}}{k}\quad\text{for } x<0$$

Open code

$$12(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right)=$$
$$-12\left\lfloor\frac{\arg(0.084083-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-12\log(z_0)-$$
$$12\left\lfloor\frac{\arg(0.084083-z_0)}{2\pi}\right\rfloor\log(z_0)+12\sum_{k=1}^{\infty}\frac{(-1)^k(0.084083-z_0)^k z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function

- i is the imaginary unit
  - More information

Integral representation:

$$12(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right) = -12\int_1^{0.084083}\frac{1}{t}\,dt$$

64Pi* colog ((((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))) / ((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))

Input:

$$64\pi\left(-\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

497.819...

This result is practically equal to the rest mass of Kaon meson 497.614±0.024

Series representations:

- More

$$(64\pi)(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right) = 64\pi\sum_{k=1}^{\infty}\frac{(-1)^k(-0.915917)^k}{k}$$

Open code

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$$(64\pi)(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right) = -128\,i\,\pi^2\left\lfloor\frac{\arg(0.084083-x)}{2\pi}\right\rfloor - 64\pi\log(x) + 64\pi\sum_{k=1}^{\infty}\frac{(-1)^k(0.084083-x)^k x^{-k}}{k} \quad \text{for } x<0$$

Open code

$$(64\pi)(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right) =$$

$$-128\, i\,\pi^2 \left\lfloor -\frac{-\pi+\arg\left(\frac{0.084083}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor -$$

$$64\pi\log(z_0)+64\pi\sum_{k=1}^{\infty}\frac{(-1)^k (0.084083-z_0)^k z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$(64\pi)(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right) = -64\pi\int_1^{0.084083}\frac{1}{t}\,dt$$

71Pi^2 * colog ((((0.5^(2^2)(1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))) / ((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))

Input:

$$71\pi^2\left(-\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

1735.00...

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

Series representations:

- More

$$(71\pi^2)(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right) = 71\pi^2\sum_{k=1}^{\infty}\frac{(-1)^k(-0.915917)^k}{k}$$

Open code

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$$(71\pi^2)(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right) = -142\,i\,\pi^3\left\lfloor\frac{\arg(0.084083-x)}{2\pi}\right\rfloor - 71\pi^2\log(x) + 71\pi^2\sum_{k=1}^{\infty}\frac{(-1)^k(0.084083-x)^k x^{-k}}{k} \quad \text{for } x<0$$

Open code

$$(71\pi^2)(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right) = -142\,i\,\pi^3\left\lfloor-\frac{-\pi+\arg\left(\frac{0.084083}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor - 71\pi^2\log(z_0) + 71\pi^2\sum_{k=1}^{\infty}\frac{(-1)^k(0.084083-z_0)^k z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x \rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$(71\pi^2)(-1)\log\left(\frac{0.5^{2^2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right) = -71\pi^2\int_1^{0.084083}\frac{1}{t}\,dt$$

Now, we have for $S_1(q)$:

Sum_{n >= 0} q^(n^2+2n) (1+q)(1+q^3)...(1+q^(2n-1))/(1+q^2)(1+q^4)...(1+q^(2n))

sum (((q^(n^2+2n) (1+q)(1+q^3)(1+q^(2n-1)))) / (((1+q^2)(1+q^4)(1+q^(2n)))), n =0 to 5

Result:

$$\sum_{n=0}^{5} \frac{q^{n^2+2n}(1+q)(1+q^3)(1+q^{2n-1})}{(1+q^2)(1+q^4)(1+q^{2n})} = \frac{1}{2(q^2+1)^2(q^4+1)^2} (q+1)(q^3+1)\left(2(q+1)(q^4+1)q^3 + \left(\frac{1}{q}+1\right)(q^2+1)(q^4+1) + 2(q^2+1)(q^3+1)q^8 + \frac{2(q^2+1)(q^4+1)(q^9+1)q^{35}}{q^{10}+1} + \frac{2(q^2+1)(q^4+1)(q^7+1)q^{24}}{q^8+1} + \frac{2(q^2+1)(q^4+1)(q^5+1)q^{15}}{q^6+1}\right)$$

Open code

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Sum:

$$\sum_{n=0}^{5} \frac{(q+1)(q^3+1)q^{n^2+2n}(q^{2n-1}+1)}{(q^2+1)(q^4+1)(q^{2n}+1)} = \frac{(q+1)^2(q^3+1)q^3}{(q^2+1)^2(q^4+1)} + \frac{\left(\frac{1}{q}+1\right)(q+1)(q^3+1)}{2(q^2+1)(q^4+1)} + \frac{(q+1)(q^3+1)^2q^8}{(q^2+1)(q^4+1)^2} + \frac{(q+1)(q^3+1)(q^9+1)q^{35}}{(q^2+1)(q^4+1)(q^{10}+1)} + \frac{(q+1)(q^3+1)(q^7+1)q^{24}}{(q^2+1)(q^4+1)(q^8+1)} + \frac{(q+1)(q^3+1)(q^5+1)q^{15}}{(q^2+1)(q^4+1)(q^6+1)}$$

Open code

sum (((0.5^(n^2+2n) (1+0.5)(1+0.5^3)(1+0.5^(2n-1)))) / (((1+0.5^2)(1+0.5^4)(1+0.5^(2n)))), n =0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(1+0.5)(1+0.5^3)\,0.5^{n^2+2n}(0.5^{2n-1}+1)}{(1+0.5^2)(1+0.5^4)(0.5^{2n}+1)} = \frac{44669619359076482127}{21253382060638208000}$$

Open code

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Decimal approximation:

- More digits
  2.101765226429807978776375749652386702804412371589230330203...

Open code

(13*3)/(24*2+2) * sum (((0.5^(n^2+2n) (1+0.5)(1+0.5^3)(1+0.5^(2n-1)))) / (((1+0.5^2)(1+0.5^4)(1+0.5^(2n)))), n =0 to 5

Input interpretation:

$$\frac{13\times 3}{24\times 2+2} \sum_{n=0}^{5} \frac{0.5^{n^2+2n}(1+0.5)(1+0.5^3)(1+0.5^{2n-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}$$

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Result:

1.63938

$$1.63938 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

24*4 + 10^3[(((13*3)/(24*2+2)*sum (((0.5^(n^2+2n) (1+0.5)(1+0.5^3)(1+0.5^(2n-1)))) / (((1+0.5^2)(1+0.5^4)(1+0.5^(2n)))), n =0 to 5)))]

Input interpretation:

$$24\times4+10^3\left(\frac{13\times3}{24\times2+2}\sum_{n=0}^{5}\frac{0.5^{n^2+2n}(1+0.5)(1+0.5^3)(1+0.5^{2n-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}\right)$$

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Result:

1735.38

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

((((((((24*4 + 10^3[(((13*3)/(24*2+2)*sum (((0.5^(n^2+2n) (1+0.5)(1+0.5^3)(1+0.5^(2n-1)))) / (((1+0.5^2)(1+0.5^4)(1+0.5^(2n)))), n =0 to 5)))]))))))))^1/3

Input interpretation:

$$\sqrt[3]{24\times4+10^3\left(\frac{13\times3}{24\times2+2}\sum_{n=0}^{5}\frac{0.5^{n^2+2n}(1+0.5)(1+0.5^3)(1+0.5^{2n-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}\right)}$$

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Result:

12.0171

This result is very near to the value of black hole entropy 12,1904

2((((((((24*4 + 10^3[(((13*3)/(24*2+2)*sum (((0.5^(n^2+2n) (1+0.5)(1+0.5^3)(1+0.5^(2n-1)))) / (((1+0.5^2)(1+0.5^4)(1+0.5^(2n)))), n =0 to 5)))]))))))))^1/3

Input interpretation:

$$2\sqrt[3]{24\times4+10^3\left(\frac{13\times3}{24\times2+2}\sum_{n=0}^{5}\frac{0.5^{n^2+2n}(1+0.5)(1+0.5^3)(1+0.5^{2n-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}\right)}$$

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Result:

24.0341

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((24*4 + 10^3[(((13*3)/(24*2+2)*sum (((0.5^(n^2+2n)
(1+0.5)(1+0.5^3)(1+0.5^(2n-1)))) / (((1+0.5^2)(1+0.5^4)(1+0.5^(2n)))), n =0 to
5)))]))))))))^1/15

Input interpretation:

$$\sqrt[15]{24\times 4+10^3\left(\frac{13\times 3}{24\times 2+2}\sum_{n=0}^{5}\frac{0.5^{n^2+2n}(1+0.5)(1+0.5^3)(1+0.5^{2n-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}\right)}$$

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Result:

1.64422

$$1.64422 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

Then:

(((q^(n^2+2n) (1+q)(1+q^3)(1+q^(2n-1)))) / (((1+q^2)(1+q^4)(1+q^(2n))))

Input:

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

Values:

n	
0	$\frac{\left(\frac{1}{q}+1\right)(q+1)(q^3+1)}{2(q^2+1)(q^4+1)}$
1	$\frac{q^3(q+1)^2(q^3+1)}{(q^2+1)^2(q^4+1)}$
2	$\frac{q^8(q+1)(q^3+1)^2}{(q^2+1)(q^4+1)^2}$
3	$\frac{q^{15}(q+1)(q^3+1)(q^5+1)}{(q^2+1)(q^4+1)(q^6+1)}$

Expanded form:

- Step-by-step solution

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

Real roots:

- Exact forms
- More digits

$n = m + 1\,, \quad q = -1\,, \quad m^2 + 6\,m \in \mathbb{Z}\,, \quad m^2 + 4\,m \in \mathbb{Z}\,, \quad 2\,m \in \mathbb{Z}\,, \quad m \in \mathbb{Z}$

Open code

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$n > 0.5\,, \quad q = 0$

-

Integer root:

$q = -1$

Open code

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Roots for the variable q:

- Step-by-step solution

$q = -1$

Open code

$q = 0$

$q = \sqrt[3]{-1}$

$q = -(-1)^{2/3}$

$q = \sqrt[2\,n-1]{-1}$

Series expansion at q = 0:

$$\frac{q^{n\,(n+2)}\,(q^{2\,n} + q)\left(\frac{1}{q} + 1 - q + q^3 - q^4 + O(q^5)\right)}{q^{2\,n} + 1}$$

Open code

- Big-O notation

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Series expansion at q = ∞:

$$\frac{q^{n\,(n+2)}\,(q^{2\,n} + q)\left(\left(\frac{1}{q}\right)^3 + \left(\frac{1}{q}\right)^4 - \left(\frac{1}{q}\right)^5 + \left(\frac{1}{q}\right)^7 - \left(\frac{1}{q}\right)^8 - \left(\frac{1}{q}\right)^9 + \left(\frac{1}{q}\right)^{11} + \left(\frac{1}{q}\right)^{12} + O\left(\left(\frac{1}{q}\right)^{13}\right)\right)}{q^{2\,n} + 1}$$

Derivative:
- Step-by-step solution

$$\frac{\partial}{\partial q}\left(\frac{q^{n^2+2n}(1+q)(1+q^3)(1+q^{2n-1})}{(1+q^2)(1+q^4)(1+q^{2n})}\right)=$$

$$\left(q^{n(n+2)}\left(-2(1+q)(1+q^3)(1+q^4)(q^{2n}+q)(1+q^{2n})+\frac{3(1+q)(1+q^2)(1+q^4)q(q^{2n}+q)(1+q^{2n})+n(n+2)(1+q)^2(1+q^2)((1+q^2)-q)(1+q^4)(q^{2n}+q)(1+q^{2n})}{q^2}-4(1+q)(1+q^2)(1+q^3)q^2(q^{2n}+q)(1+q^{2n})+(2n-1)(1+q)(1+q^2)(1+q^3)(1+q^4)(1+q^{2n})q^{2n-2}+(1+q^2)(1+q^3)(1+q^4)(q^{2n-1}+1)(1+q^{2n})-2n(1+q)(1+q^2)(1+q^3)(1+q^4)(q^{2n}+q)q^{2n-2}\right)\right)\Big/\left((1+q^2)^2(1+q^4)^2(1+q^{2n})^2\right)$$

For q = 0.5 and n =2, we obtain for $S_1(q)$:

((((0.5^(2^2+2*2) (1+0.5)(1+0.5^3)(1+0.5^(2*2-1))))) / (((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))))

Input:

$$\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}$$

Open code

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Result:
- More digits

0.005255190311418685121107266435986159169550173010380622837...

Open code

0.005255190311418685121107266435986159169550173010380622837

(21*5)Pi * colog ((((((0.5^(2^2+2*2) (1+0.5)(1+0.5^3)(1+0.5^(2*2-1))))) / (((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))))))

Input:

$$(21\times 5)\pi\left(-\log\left(\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

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Result:
- More digits

1731.32...

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

Series representations:

- More

$$\left(\pi\left(-\log\left(\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)\right)21\times 5 = 105\,\pi\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.994745)^k}{k}$$

Open code

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$$\left(\pi\left(-\log\left(\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)\right)21\times 5 = -210\,i\,\pi^2\left\lfloor\frac{\arg(0.00525519-x)}{2\,\pi}\right\rfloor - 105\,\pi\log(x) + 105\,\pi\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.00525519-x)^k\,x^{-k}}{k}\quad\text{for } x<0$$

Open code

$$\left(\pi\left(-\log\left(\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)\right)21\times 5 = -210\,i\,\pi^2\left\lfloor-\frac{-\pi+\arg\left(\frac{0.00525519}{z_0}\right)+\arg(z_0)}{2\,\pi}\right\rfloor - 105\,\pi\log(z_0) + 105\,\pi\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.00525519-z_0)^k\,z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$\left(\pi\left(-\log\left(\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)\right)21\times 5 = -105\,\pi\int_1^{0.00525519}\frac{1}{t}\,dt$$

(((((((((21*5)Pi * colog ((((((0.5^(2^2+2*2) (1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))))) / (((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2)))))))))))))))^1/3

Input:

$$\sqrt[3]{(21\times5)\pi\left(-\log\left(\frac{0.5^{2^2+2\times2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right)\right)}$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

12.0077...

This result is very near to the value of black hole entropy 12,1904

2*(((((((((21*5)Pi * colog ((((((0.5^(2^2+2*2) (1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))))) / (((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2)))))))))))))))^1/3

Input:

$$2\sqrt[3]{(21\times5)\pi\left(-\log\left(\frac{0.5^{2^2+2\times2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right)\right)}$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

24.0154...

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

Series representations:

- More

$$2\sqrt[3]{\left(\pi\left(-\log\left(\frac{0.5^{2^2+2\times2}(1+0.5)(1+0.5^3)(1+0.5^{2\times2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times2})}\right)\right)\right)21\times5} =$$

$$2\sqrt[3]{105}\sqrt[3]{\pi\sum_{k=1}^{\infty}\frac{(-1)^k(-0.994745)^k}{k}}$$

Open code

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$$2\sqrt[3]{\left(\pi\left(-\log\left(\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)\right)21\times 5} = 2\sqrt[3]{105}\sqrt[3]{-\pi\left(2\,i\,\pi\left\lfloor\frac{\arg(0.00525519-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k(0.00525519-x)^k x^{-k}}{k}\right)}$$

for $x < 0$

Open code

$$2\sqrt[3]{\left(\pi\left(-\log\left(\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)\right)21\times 5} = 2\sqrt[3]{105}\left(-\pi\left(\log(z_0)+\left\lfloor\frac{\arg(0.00525519-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k(0.00525519-z_0)^k z_0^{-k}}{k}\right)\right)\hat{}\,(1/3)$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$2\sqrt[3]{\left(\pi\left(-\log\left(\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)\right)21\times 5} = 2\sqrt[3]{105}\sqrt[3]{-\pi\int_1^{0.00525519}\frac{1}{t}\,dt}$$

((((((((21*5)Pi * colog ((((((0.5^(2^2+2*2) (1+0.5)(1+0.5^3)(1+0.5^(2*2-1)))))) / (((((1+0.5^2)(1+0.5^4)(1+0.5^(2*2)))))))))))))^1/15

Input:

$$\sqrt[15]{(21\times 5)\,\pi\left(-\log\left(\frac{0.5^{2^2+2\times 2}(1+0.5)(1+0.5^3)(1+0.5^{2\times 2-1})}{(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}\right)\right)}$$

Open code

- log(x) is the natural logarithm

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Result:

- Fewer digits
- More digits

1.6439622487233716088085426550602525325179997402714025830 71...

$$1.6439622487233716088\ldots \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{15+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{39+\cfrac{1}{7+\cfrac{1}{2+\cfrac{1}{5+\cfrac{1}{1+\cfrac{1}{5+\cfrac{1}{1+\cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\frac{2\,289\,028\,079\,\pi}{4\,374\,305\,920} \approx 1.643962248723371608 77978$$

$$\frac{\log\left(\frac{560\,160\,117}{180\,626}\right)}{\log(133)} \approx 1.643962248723371608 77616$$

π root of $766 x^4 + 4829 x^3 + 22 x^2 - 1929 x + 254$ near $x = 0.523289$ ≈ 1.643962248723371608 74570

Now, for $T_0(q)$, we have:

sum (q^((n+1)(n+2)) (1+q^2)(1+q^4)(1+q^(2n))/(((1+q)(1+q^3)(1+q^(2n+1))))) , n = 0 to m

Input interpretation:

$$\sum_{n=0}^{m} \frac{q^{(n+1)(n+2)}(1+q^2)(1+q^4)(1+q^{2n})}{(1+q)(1+q^3)(1+q^{2n+1})}$$

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Result:

$$\sum_{n=0}^{m} \frac{q^{(n+1)(n+2)}(1+q^2)(1+q^4)(1+q^{2n})}{(1+q)(1+q^3)(1+q^{2n+1})}$$

sum (q^((n+1)(n+2)) (1+q^2)(1+q^4)(1+q^(2n))/(((1+q)(1+q^3)(1+q^(2n+1))))) , n =0 to 5

Result:

$$\sum_{n=0}^{5} \frac{q^{(n+1)(n+2)}(1+q^2)(1+q^4)(1+q^{2n})}{(1+q)(1+q^3)(1+q^{2n+1})} = \frac{2(q^2+1)(q^4+1)q^2}{(q+1)^2(q^3+1)} + \frac{(q^2+1)^2(q^4+1)q^6}{(q+1)(q^3+1)^2} + \frac{(q^2+1)(q^4+1)^2q^{12}}{(q+1)(q^3+1)(q^5+1)} + \frac{(q^2+1)(q^4+1)(q^{10}+1)q^{42}}{(q+1)(q^3+1)(q^{11}+1)} + \frac{(q^2+1)(q^4+1)(q^8+1)q^{30}}{(q+1)(q^3+1)(q^9+1)} + \frac{(q^2+1)(q^4+1)(q^6+1)q^{20}}{(q+1)(q^3+1)(q^7+1)}$$

Open code

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Result:

$$\sum_{n=0}^{5} \frac{q^{(n+1)(n+2)}(1+q^2)(1+q^4)(1+q^{2n})}{(1+q)(1+q^3)(1+q^{2n+1})} = \frac{1}{(q+1)^2(q^3+1)^2} q^2(q^2+1)(q^4+1)\left(2(q^3+1)+(q+1)(q^2+1)q^4 + \frac{(q+1)(q^3+1)(q^{10}+1)q^{40}}{q^{11}+1} + \frac{(q+1)(q^3+1)(q^8+1)q^{28}}{q^9+1} + \frac{(q+1)(q^3+1)(q^6+1)q^{18}}{q^7+1} + \frac{(q+1)(q^3+1)(q^4+1)q^{10}}{q^5+1}\right)$$

Open code

sum (0.5^((n+1)(n+2)) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))/(((1+0.5)(1+0.5^3)(1+0.5^(2n+1))))) , n =0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(1+0.5^2)(1+0.5^4)\,0.5^{(n+1)(n+2)}(0.5^{2n}+1)}{(1+0.5)(1+0.5^3)(0.5^{2n+1}+1)} = \frac{10871498844334353191855}{39359791323927357161472}$$

Open code

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Decimal approximation:

- More digits

0.27620824396305729109920193644963981155834585497496001068 9...

Open code

6 * sum (0.5^((n+1)(n+2)) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))/(((1+0.5)(1+0.5^3)(1+0.5^(2n+1))))) , n =0 to 5

Input interpretation:

$$6\sum_{n=0}^{5} 0.5^{(n+1)(n+2)}\,(1+0.5^2)(1+0.5^4)\times\frac{1+0.5^{2n}}{(1+0.5)(1+0.5^3)(1+0.5^{2n+1})}$$

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Result:

1.65725

1.65725 is very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164{,}2696$ i.e. 1,65578...

24*3 + 10^3[((6 * sum (0.5^((n+1)(n+2)) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))/(((1+0.5)(1+0.5^3)(1+0.5^(2n+1))))) , n =0 to 5))]

Input interpretation:

$$24\times3+10^3\left(6\sum_{n=0}^{5} 0.5^{(n+1)(n+2)}\,(1+0.5^2)(1+0.5^4)\times\frac{1+0.5^{2n}}{(1+0.5)(1+0.5^3)(1+0.5^{2n+1})}\right)$$

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Result:

1729.25

This result is very near to the mass of candidate glueball $f_0(1710)$ meson. Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729

((((((((24*3 + 10^3[((6 * sum (0.5^((n+1)(n+2)) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))/(((1+0.5)(1+0.5^3)(1+0.5^(2n+1))))) , n =0 to 5))]))))))))^1/3

Input interpretation:

$$\sqrt[3]{24\times3+10^3\left(6\sum_{n=0}^{5} 0.5^{(n+1)(n+2)}\,(1+0.5^2)(1+0.5^4)\times\frac{1+0.5^{2n}}{(1+0.5)(1+0.5^3)(1+0.5^{2n+1})}\right)}$$

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Result:

12.0029

This result is very near to the value of black hole entropy 12,1904

2((((((((24*3 + 10^3[((6 * sum (0.5^((n+1)(n+2)) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))/(((1+0.5)(1+0.5^3)(1+0.5^(2n+1))))) , n =0 to 5))]))))))))^1/3

Input interpretation:

$$2\left(24\times 3+10^3\left(6\sum_{n=0}^{5}0.5^{(n+1)(n+2)}\left(1+0.5^2\right)\left(1+0.5^4\right)\times\frac{1+0.5^{2n}}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2n+1}\right)}\right)\right)\text{^}(1/3)$$

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Result:

24.0058

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((24*3 + 10^3[((6 * sum (0.5^((n+1)(n+2)) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))/(((1+0.5)(1+0.5^3)(1+0.5^(2n+1))))) , n =0 to 5))])))))))^1/15

Input interpretation:

$$\sqrt[15]{24\times 3+10^3\left(6\sum_{n=0}^{5}0.5^{(n+1)(n+2)}\left(1+0.5^2\right)\left(1+0.5^4\right)\times\frac{1+0.5^{2n}}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2n+1}\right)}\right)}$$

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Result:

1.64383

$$1.64383 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

For which, for q = 0.5, and n = 2, we obtain:

((((((0.5^((2+1)(2+2)) (1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))))/(((1+0.5)(1+0.5^3)(1+0.5^(2*2+1)))))

Input:

$$\frac{0.5^{(2+1)(2+2)}\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2+1}\right)}$$

Open code

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Result:

- More digits

0.000197970372124017957351290684624017957351290684624017957...

0.000197970372124017957351290684624017957351290684624017957

(89+5)Pi * colog((((((0.5^((2+1)(2+2))(1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))))/(((1+0.5)(1+0.5^3)(1+0.5^(2*2+1)))))

Input:

$$(89+5)\pi\left(-\log\left(\frac{0.5^{(2+1)(2+2)}\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2+1}\right)}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

2518.22...

This result 2518,22 is practically equal to the rest mass of charmed Sigma baryon 2517.9±0.6

Series representations:

- More

$$((89+5)\pi)(-1)\log\left(\frac{0.5^{(2+1)(2+2)}\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2+1}\right)}\right)=94\pi\sum_{k=1}^{\infty}\frac{(-1)^k(-0.999802)^k}{k}$$

Open code

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$$((89+5)\pi)(-1)\log\left(\frac{0.5^{(2+1)(2+2)}\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2+1}\right)}\right)=-188\,i\,\pi^2\left\lfloor\frac{\arg(0.00019797-x)}{2\pi}\right\rfloor-94\pi\log(x)+94\pi\sum_{k=1}^{\infty}\frac{(-1)^k(0.00019797-x)^k x^{-k}}{k}\quad\text{for } x<0$$

Open code

$$((89+5)\pi)(-1)\log\left(\frac{0.5^{(2+1)(2+2)}\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2+1}\right)}\right)=-188\,i\,\pi^2\left\lfloor-\frac{-\pi+\arg\left(\frac{0.00019797}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor-94\pi\log(z_0)+94\pi\sum_{k=1}^{\infty}\frac{(-1)^k(0.00019797-z_0)^k z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x \rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$((89+5)\pi)(-1)\log\left(\frac{0.5^{(2+1)(2+2)}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right) = -94\pi\int_1^{0.00019797}\frac{1}{t}\,dt$$

((((((((94Pi * colog((((((0.5^((2+1)(2+2))(1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))))/(((1+0.5)(1+0.5^3)(1+0.5^(2*2+1))))))))))^1/3

Input:

$$\sqrt[3]{94\pi\left(-\log\left(\frac{0.5^{(2+1)(2+2)}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

13.6050...

This result is practically equal to the Rydberg constant 13,605693 eV that is used to express the limiting value of the highest wavenumber (inverse wavelength) of any photon that can be emitted from an atom, or, alternatively, the wavenumber of the lowest-energy photon capable of ionizing an atom from its ground state.

5/3*((((((((94Pi*colog((((((0.5^((2+1)(2+2))(1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))))/(((1+0.5)(1+0.5^3)(1+0.5^(2*2+1))))))))))^1/3

Input:

$$\frac{5}{3}\sqrt[3]{94\pi\left(-\log\left(\frac{0.5^{(2+1)(2+2)}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- More digits

22.6750...

This result is very near to the value of black hole entropy 22,6589

Series representations:

- More

$$\frac{1}{3}\sqrt[3]{94\pi\left(-\log\left(\frac{0.5^{(2+1)(2+2)}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}\,5 = \frac{5}{3}\sqrt[3]{94}\sqrt[3]{\pi\sum_{k=1}^{\infty}\frac{(-1)^k(-0.999802)^k}{k}}$$

Open code

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$$\frac{1}{3}\sqrt[3]{94\pi\left(-\log\left(\frac{0.5^{(2+1)(2+2)}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}\,5 = \frac{5}{3}\sqrt[3]{94}\sqrt[3]{-\pi\left(2\,i\,\pi\left\lfloor\frac{\arg(0.00019797-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k(0.00019797-x)^k x^{-k}}{k}\right)}$$

for $x < 0$

Open code

$$\frac{1}{3}\sqrt[3]{94\pi\left(-\log\left(\frac{0.5^{(2+1)(2+2)}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}\,5 = \frac{5}{3}\sqrt[3]{94}\left(-\pi\left(\log(z_0)+\left\lfloor\frac{\arg(0.00019797-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k(0.00019797-z_0)^k z_0^{-k}}{k}\right)\right)\,\hat{}\,(1/3)$$

Integral representation:

$$\frac{1}{3}\sqrt[3]{94\pi\left(-\log\left(\frac{0.5^{(2+1)(2+2)}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}\,5 = \frac{5}{3}\sqrt[3]{94}\sqrt[3]{-\pi\int_1^{0.00019797}\frac{1}{t}\,dt}$$

((((((((94Pi * colog((((((0.5^((2+1)(2+2))(1+0.5^2)(1+0.5^4)(1+0.5^(2*2))))))/(((1+0.5)(1+0.5^3)(1+0.5^(2*2+1))))))))))^1/16

Input:

$$\sqrt[16]{94\pi\left(-\log\left(\frac{0.5^{(2+1)(2+2)}\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times2}\right)}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times2+1}\right)}\right)\right)}$$

Open code

- $\log(x)$ is the natural logarithm

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Result:

- Fewer digits
- More digits

1.6314297433431974871136052861968733957579776055878345 41840...

1.6314297433431974871136052861968733957579776055878345

This result is a golden number

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{18+\cfrac{1}{6+\cfrac{1}{1+\cfrac{1}{10+\cfrac{1}{3+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{15+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{\cdots}}}}}}}}}}}}}}}}}}}}}$$

Open code

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Possible closed forms:

- More

$\frac{1754809196\,\pi}{3379180563} \approx 1.63142974334319748707458$

root of $8228x^3 + 32559x^2 - 60588x - 23540$ near $x = 1.63143$ $\approx$ 1.63142974334319748710 4480

$\frac{1}{\text{root of } 23540x^3 + 60588x^2 - 32559x - 8228 \text{ near } x = 0.612959}$ $\approx$ 1.63142974334319748710 4480

Now, for $T_1(q)$, we have:

sum (q^(n^2+n) (1+q^2)(1+q^4)(1+q^(2n))) / ((1+q)(1+q^3)(1+q^(2n+1))), n= 0 to k

Input interpretation:

$$\sum_{n=0}^{k} \frac{q^{n^2+n}(1+q^2)(1+q^4)(1+q^{2n})}{(1+q)(1+q^3)(1+q^{2n+1})}$$

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Result:

$$\sum_{n=0}^{k} \frac{q^{n^2+n}(1+q^2)(1+q^4)(1+q^{2n})}{(1+q)(1+q^3)(1+q^{2n+1})}$$

For q = 0.5, we obtain:

sum (0.5^(n^2+n) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))) / ((1+0.5)(1+0.5^3)(1+0.5^(2n+1))), n= 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(1+0.5^2)(1+0.5^4)\,0.5^{n^2+n}\,(0.5^{2n}+1)}{(1+0.5)(1+0.5^3)(0.5^{2n+1}+1)} = \frac{12\,308\,281\,534\,536\,114\,095}{9\,609\,324\,053\,693\,202\,432}$$

Open code

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Decimal approximation:

- More digits
  1.2808686090470231392597356459974590650343499567167466452 87...

Open code

((((sum (0.5^(n^2+n) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))) / ((1+0.5)(1+0.5^3)(1+0.5^(2n+1))), n= 0 to 5))))^2

Input interpretation:

$$\left(\sum_{n=0}^{5} \frac{0.5^{n^2+n}(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}{(1+0.5)(1+0.5^3)(1+0.5^{2n+1})}\right)^2$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64062

$$1.64062 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

24*4 + 10^3((((sum (0.5^(n^2+n) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))) / ((1+0.5)(1+0.5^3)(1+0.5^(2n+1))), n= 0 to 5))))^2

Input interpretation:

$$24\times 4+10^3\left(\sum_{n=0}^{5} \frac{0.5^{n^2+n}(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}{(1+0.5)(1+0.5^3)(1+0.5^{2n+1})}\right)^2$$

Enlarge Data Customize A Plaintext Interactive

Result:

1736.62

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

[(((24*4 + 10^3((((sum (0.5^(n^2+n) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))) / ((1+0.5)(1+0.5^3)(1+0.5^(2n+1))), n= 0 to 5))))^2)))]^1/3

Input interpretation:

$$\sqrt[3]{24\times 4+10^3\left(\sum_{n=0}^{5}\frac{0.5^{n^2+n}(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}{(1+0.5)(1+0.5^3)(1+0.5^{2n+1})}\right)^2}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0199

This result is very near to the value of black hole entropy 12,1904

2[(((24*4 + 10^3((((sum (0.5^(n^2+n) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))) / ((1+0.5)(1+0.5^3)(1+0.5^(2n+1))), n= 0 to 5))))^2)))]^1/3

Input interpretation:

$$2\sqrt[3]{24\times 4+10^3\left(\sum_{n=0}^{5}\frac{0.5^{n^2+n}(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}{(1+0.5)(1+0.5^3)(1+0.5^{2n+1})}\right)^2}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0399

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

[(((24*4 + 10^3((((sum (0.5^(n^2+n) (1+0.5^2)(1+0.5^4)(1+0.5^(2n))) / ((1+0.5)(1+0.5^3)(1+0.5^(2n+1))), n= 0 to 5))))^2)))]^1/15

Input interpretation:

$$\sqrt[15]{24\times 4+10^3\left(\sum_{n=0}^{5}\frac{0.5^{n^2+n}(1+0.5^2)(1+0.5^4)(1+0.5^{2n})}{(1+0.5)(1+0.5^3)(1+0.5^{2n+1})}\right)^2}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.6443

$1.6443 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

From which, for q = 0.5, and n = 2, we obtain:

(0.5^(2^2+2) (1+0.5^2)(1+0.5^4)(1+0.5^(2*2))) / ((1+0.5)(1+0.5^3)(1+0.5^(2*2+1)))

Input:

$$\frac{0.5^{2^2+2}\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2+1}\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.012670103815937149270482603815937149270482603815937149270...

0.012670103815937149270482603815937149270482603815937149270

(64+48)Pi * colog((((0.5^(2^2+2) (1+0.5^2)(1+0.5^4)(1+0.5^(2*2))) / ((1+0.5)(1+0.5^3)(1+0.5^(2*2+1))))))

Input:

$$(64+48)\,\pi\left(-\log\left(\frac{0.5^{2^2+2}\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2+1}\right)}\right)\right)$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1537.10...

1537.10...

This result is very near to the rest mass of Xi baryon, 1535.0±0.6

Series representations:

- More

$$((64+48)\,\pi)(-1)\log\left(\frac{0.5^{2^2+2}\left(1+0.5^2\right)\left(1+0.5^4\right)\left(1+0.5^{2\times 2}\right)}{(1+0.5)\left(1+0.5^3\right)\left(1+0.5^{2\times 2+1}\right)}\right)=$$

$$112\,\pi\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98733)^k}{k}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$((64+48)\pi)(-1)\log\left(\frac{0.5^{2^2+2}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right) = -224\,i\,\pi^2\left\lfloor\frac{\arg(0.0126701-x)}{2\pi}\right\rfloor - 112\pi\log(x) + 112\pi\sum_{k=1}^{\infty}\frac{(-1)^k(0.0126701-x)^k x^{-k}}{k} \quad \text{for } x<0$$

Open code

$$((64+48)\pi)(-1)\log\left(\frac{0.5^{2^2+2}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right) = -224\,i\,\pi^2\left\lfloor-\frac{-\pi+\arg\left(\frac{0.0126701}{z_0}\right)+\arg(z_0)}{2\pi}\right\rfloor - 112\pi\log(z_0) + 112\pi\sum_{k=1}^{\infty}\frac{(-1)^k(0.0126701-z_0)^k z_0^{-k}}{k}$$

Open code

- $\arg(z)$ is the complex argument
- $\lfloor x\rfloor$ is the floor function
- i is the imaginary unit
- More information

Integral representation:

$$((64+48)\pi)(-1)\log\left(\frac{0.5^{2^2+2}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right) = -112\pi\int_1^{0.0126701}\frac{1}{t}\,dt$$

21/10 *(((((64+48)Pi * colog((((0.5^(2^2+2) (1+0.5^2)(1+0.5^4)(1+0.5^(2*2))) / ((1+0.5)(1+0.5^3)(1+0.5^(2*2+1)))))))))^1/3

Input:

$$\frac{21}{10}\sqrt[3]{(64+48)\pi\left(-\log\left(\frac{0.5^{2^2+2}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

24.2356...

This result is very near to the value of black hole entropy 24,2477

Series representations:

- More

$$\frac{1}{10}\sqrt[3]{(64+48)\pi\left(-\log\left(\frac{0.5^{2^2+2}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}\ 21 = \frac{21}{5}\sqrt[3]{14}\sqrt[3]{\pi\sum_{k=1}^{\infty}\frac{(-1)^k(-0.98733)^k}{k}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{10}\sqrt[3]{(64+48)\pi\left(-\log\left(\frac{0.5^{2^2+2}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}\ 21 = \frac{21}{5}\sqrt[3]{14}\sqrt[3]{-\pi\left(2 i \pi\left\lfloor\frac{\arg(0.0126701-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k(0.0126701-x)^k x^{-k}}{k}\right)} \text{ for } x<0$$

Open code

$$\frac{1}{10}\sqrt[3]{(64+48)\pi\left(-\log\left(\frac{0.5^{2^2+2}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}\ 21 = \frac{21}{5}\sqrt[3]{14}\left(-\pi\left(\log(z_0)+\left\lfloor\frac{\arg(0.0126701-z_0)}{2\pi}\right\rfloor\left(\log\left(\frac{1}{z_0}\right)+\log(z_0)\right)-\sum_{k=1}^{\infty}\frac{(-1)^k(0.0126701-z_0)^k z_0^{-k}}{k}\right)\right)\hat{}\,(1/3)$$

Integral representation:

$$\frac{1}{10}\sqrt[3]{(64+48)\pi\left(-\log\left(\frac{0.5^{2^2+2}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}\ 21 = \frac{21}{5}\sqrt[3]{14}\sqrt[3]{-\pi\int_1^{0.0126701}\frac{1}{t}\,dt}$$

(((((64+48)Pi * colog((((0.5^(2^2+2) (1+0.5^2)(1+0.5^4)(1+0.5^(2*2))) / ((1+0.5)(1+0.5^3)(1+0.5^(2*2+1))))))))))^1/15

Input:

$$\sqrt[15]{(64+48)\pi\left(-\log\left(\frac{0.5^{2^2+2}(1+0.5^2)(1+0.5^4)(1+0.5^{2\times 2})}{(1+0.5)(1+0.5^3)(1+0.5^{2\times 2+1})}\right)\right)}$$

Open code

- $\log(x)$ is the natural logarithm

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1.630972916189556785819348558554576940564118336187924665693...

1.630972916189556785819348558554576940564118336187924 6

This result is a golden number

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{4+\cfrac{1}{6+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{12+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{5+\cfrac{1}{8+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{21+\cfrac{1}{7+\cfrac{1}{\ldots}}}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$\frac{6}{7}\pi\tanh^2\left(\frac{843868}{810687}\right)\approx 1.630972916189556745194$

$-\frac{2(-154-50e+105e^2)}{3(75-136e+13e^2)}\approx 1.63097291618955678550412$

$\frac{1533309737\pi}{2953473082}\approx 1.63097291618955678579349$

Some development concerning some mock theta function of order 6

Ramanujan (1988) wrote down seven mock theta functions of order 6 in his lost notebook, and stated 11 identities between them, which were proved in (Andrews & Hickerson 1991). Two of Ramanujan's identities relate φ and ψ at various arguments, four of them express φ and ψ in terms of Appell–Lerch series, and the last five identities express the remaining five sixth-order mock theta functions in terms of φ and ψ. Berndt & Chan (2007) discovered two more sixth order functions.

We have the following function:

$$\sigma(q) = \sum_{n \geq 0} \frac{q^{(n+1)(n+2)/2}(-q;q)_n}{(q;q^2)_{n+1}}$$

That is:

Sum_{n >= 0} q^((n+1)(n+2)/2) (1+q)(1+q^2)...(1+q^n)/((1-q)(1-q^3)...(1-q^(2n+1)))

We have that:

sum q^((n+1)(n+2)/2) (1+q)(1+q^2)(1+q^n)))/((1-q)(1-q^3)(1-q^(2n+1))), n = 0 to k

Input interpretation:

$$\sum_{n=0}^{k} \frac{q^{1/2(n+1)(n+2)}(1+q)(1+q^2)(1+q^n)}{(1-q)(1-q^3)(1-q^{2n+1})}$$

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Result:

$$\sum_{n=0}^{k} \frac{q^{1/2(n+1)(n+2)}(1+q)(1+q^2)(1+q^n)}{(1-q)(1-q^3)(1-q^{2n+1})}$$

Open code

For q = 0.5 and n = 2, we develop the above formula in the following way:

(((0.5^((2+1)(2+2)/2) (1+0.5)(1+0.5^2)(1+0.5^2)))/(((1-0.5)(1-0.5^3)(1-0.5^(2*2+1)))

Input:

$$\frac{0.5^{(2+1)\times(2+2)/2}(1+0.5)(1+0.5^2)(1+0.5^2)}{(1-0.5)(1-0.5^3)(1-0.5^{2\times2+1})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  0.0864055299539170506912442396313364055299539170506912244239...
  Open code

0.0864055...

1+(((0.5^((2+1)(2+2)/2) (1+0.5)(1+0.5^2)(1+0.5^2)))/(((1-0.5)(1-0.5^3)(1-0.5^(2*2+1)))

Input:

$$1+\frac{0.5^{(2+1)\times(2+2)/2}\,(1+0.5)\,(1+0.5^2)\,(1+0.5^2)}{(1-0.5)\,(1-0.5^3)\,(1-0.5^{2\times2+1})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  1.0864055299539170506912442396313364055299539170506912244239...
  Open code

1.0864055...

(Multiplying this value by 9, we obtain: 9.7776497695, value very near to the next result considering the various summations)

((((((1+(((0.5^((2+1)(2+2)/2) (1+0.5)(1+0.5^2)(1+0.5^2)))/(((1-0.5)(1-0.5^3)(1-0.5^(2*2+1))))))))^6

Input:

$$\left(1+\frac{0.5^{(2+1)\times(2+2)/2}\,(1+0.5)\,(1+0.5^2)\,(1+0.5^2)}{(1-0.5)\,(1-0.5^3)\,(1-0.5^{2\times2+1})}\right)^6$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  1.6441892537128565539635798944219951777873851611246030006667...
  Open code

$1.6441892537128565539... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

24*3 + 10^3 * ((((((1+(((0.5^((2+1)(2+2)/2) (1+0.5)(1+0.5^2)(1+0.5^2)))/(((1-0.5)(1-0.5^3)(1-0.5^(2*2+1))))))))^6

Input:

$$24\times3+10^3\left(1+\frac{0.5^{(2+1)\times(2+2)/2}\,(1+0.5)\,(1+0.5^2)\,(1+0.5^2)}{(1-0.5)\,(1-0.5^3)\,(1-0.5^{2\times2+1})}\right)^6$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1716.189253712856553963579894421995177787385161124603000667...

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

(((((((24*3 + 10^3 * ((((((1+(((0.5^((2+1)(2+2)/2) (1+0.5)(1+0.5^2)(1+0.5^2)))/(((1-0.5)(1-0.5^3)(1-0.5^(2*2+1)))))))^6))))))))))^1/3

Input:

$$\sqrt[3]{24\times3+10^3\left(1+\frac{0.5^{(2+1)\times(2+2)/2}\,(1+0.5)\,(1+0.5^2)\,(1+0.5^2)}{(1-0.5)\,(1-0.5^3)\,(1-0.5^{2\times2+1})}\right)^6}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

11.9726...

This result is very near to the value of black hole entropy 12,1904

2*(((((((24*3 + 10^3 * ((((((1+(((0.5^((2+1)(2+2)/2) (1+0.5)(1+0.5^2)(1+0.5^2)))/(((1-0.5)(1-0.5^3)(1-0.5^(2*2+1)))))))^6))))))))))^1/3

Input:

$$2\sqrt[3]{24\times3+10^3\left(1+\frac{0.5^{(2+1)\times(2+2)/2}\,(1+0.5)\,(1+0.5^2)\,(1+0.5^2)}{(1-0.5)\,(1-0.5^3)\,(1-0.5^{2\times2+1})}\right)^6}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

23.9452...

This result is very near to the value of black hole entropy 23,9078

(((((((24*3 + 10^3 * ((((((1+(((0.5^((2+1)(2+2)/2) (1+0.5)(1+0.5^2)(1+0.5^2)))/(((1-0.5)(1-0.5^3)(1-0.5^(2*2+1)))))))^6))))))))))^1/15

Input:

$$\sqrt[15]{24\times3+10^3\left(1+\frac{0.5^{(2+1)\times(2+2)/2}\,(1+0.5)\,(1+0.5^2)\,(1+0.5^2)}{(1-0.5)\,(1-0.5^3)\,(1-0.5^{2\times2+1})}\right)^6}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.643000...

$1.643 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

For the same function, we have for n = 0 to infinity:

sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to infinity

Input interpretation:

$$\sum_{n=0}^{\infty} \frac{0.5^{1/2 (n+1)(n+2)} (1+0.5)(1+0.5^2)(1+0.5^n)}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})}$$

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Approximated sum:

- More digits

$$\sum_{n=0}^{\infty} \frac{0.5^{1/2 (n+1)(n+2)} (1+0.5)(1+0.5^2)(1+0.5^n)}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})} \approx 9.58109$$

For n = 0 to 2

sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 2

Sum:

$$\sum_{n=0}^{2} \frac{(1+0.5)(1+0.5^2)\, 0.5^{1/2 (n+1)(n+2)} (0.5^n+1)}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})} = \frac{58185}{6076}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

9.576201448321263989466754443712969058591178406846609611586...

Or;

sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 256

Sum:

- Exact form
- Fewer digits
- More digits

$$\sum_{n=0}^{256} \frac{0.5^{1/2 (n+1)(n+2)} (1+0.5)(1+0.5^2)(1+0.5^n)}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})} \approx$$

9.581088309560082244789784629413838843313

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

9.581088309560082244789784629413838843312764316015269774097...

The value is always about 9.58

1/12 * exp sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5

Input interpretation:

$$\frac{1}{12} \exp\left(\sum_{n=0}^{5} 0.5^{(n+1)\times(n+2)/2} (1+0.5)\left(1+0.5^2\right) \times \frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}\right)$$

Enlarge Data Customize A Plaintext Interactive

Result:

1207.35

1207.35

[1/12 * exp sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5]^1/14

Input interpretation:

$$\sqrt[14]{\frac{1}{12} \exp\left(\sum_{n=0}^{5} 0.5^{(n+1)\times(n+2)/2} (1+0.5)\left(1+0.5^2\right) \times \frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}\right)}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.66009

1.66009 is very near to the 14th root of the following Ramanujan's class invariant $Q = \left(G_{505}/G_{101/5}\right)^3$ = 1164,2696 i.e. 1,65578...

[1/12 * exp sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5]^1/15

Input interpretation:

$$\sqrt[15]{\frac{1}{12} \exp\left(\sum_{n=0}^{5} 0.5^{(n+1)\times(n+2)/2} (1+0.5)\left(1+0.5^2\right) \times \frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}\right)}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.60493

1.60493

This result is a golden number, very near to the electric charge of positron

The mean between the two results is: (1.66009 + 1.60493) / 2 = 1,63251

2 * [sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5]^3

Input interpretation:

$$2\left(\sum_{n=0}^{5} 0.5^{(n+1)\times(n+2)/2}\,(1+0.5)\left(1+0.5^2\right)\times\frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}\right)^3$$

Enlarge Data Customize A Plaintext Interactive

Result:

1759.04

result in the range of the mass of candidate “glueball” $f_0(1710)$ and the hypothetical mass of Gluino

((((((2 * [sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5]^3))))))^1/3

Input interpretation:

$$\sqrt[3]{2\left(\sum_{n=0}^{5} 0.5^{(n+1)\times(n+2)/2}\,(1+0.5)\left(1+0.5^2\right)\times\frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}\right)^3}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0714

This result is very near to the value of black hole entropy 12,1904

2*((((((2 * [sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5]^3))))))^1/3

Input interpretation:

$$2\sqrt[3]{2\left(\sum_{n=0}^{5} 0.5^{(n+1)\times(n+2)/2}\,(1+0.5)\left(1+0.5^2\right)\times\frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}\right)^3}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.1428

This result is very near to the values of black hole entropies 24.2477

((((((2 * [sum 0.5^((n+1)(n+2)/2) (1+0.5)(1+0.5^2)(1+0.5^n)))/((1-0.5)(1-0.5^3)(1-0.5^(2n+1))), n = 0 to 5]^3))))))^1/15

Input interpretation:

$$\sqrt[15]{2\left(\sum_{n=0}^{5} 0.5^{(n+1)\times(n+2)/2}\,(1+0.5)\left(1+0.5^2\right)\times\frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}\right)^3}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.6457

$1.6457 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{\ldots}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$\sqrt{7} - 1 \approx 1.645751311$

$\frac{\pi^2}{6} \approx 1.6449340$

$\frac{130}{79} \approx 1.64556962$

Now:

$$\rho(q) = \sum_{n\geq 0} \frac{q^{n(n+1)/2}(-q;q)_n}{(q;q^2)_{n+1}}$$

That is:

Sum_{n >= 0} (q^(n(n+1)/2) *(1+q)*(1+q^2)...(1+q^n)/((1-q)*(1-q^3)...(1-q^(2n+1))))

sum (0.5^(n(n+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^n)/((1-0.5)*(1-0.5^3)(1-0.5^(2n+1)))), n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(1+0.5)(1+0.5^2)\,0.5^{1/2\,n(n+1)}(0.5^n+1)}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})} = \frac{159\,314\,890\,064\,385}{7\,379\,758\,720\,768}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

21.58808927127164225765681655593742296293395065963169130459...

This result is very near to the black hole entropy 21,7656

1/13*(sum (0.5^(n(n+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^n)/((1-0.5)*(1-0.5^3)(1-0.5^(2n+1)))), n = 0 to 5)))

Input interpretation:

$$\frac{1}{13}\sum_{n=0}^{5} 0.5^{n\times(n+1)/2}\,(1+0.5)\left(1+0.5^2\right)\times\frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.66062

1.66062 is very near to the 14th root of the following Ramanujan's class invariant $Q=\left(G_{505}/G_{101/5}\right)^3$ = 1164,2696 i.e. 1,65578...

(((((((sum (0.5^(n(n+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^n)/((1-0.5)*(1-0.5^3)(1-0.5^(2n+1)))), n = 0 to 5))))))^1/6

Input interpretation:

$$\sqrt[6]{\sum_{n=0}^{5} 0.5^{n\times(n+1)/2}\,(1+0.5)\left(1+0.5^2\right)\times\frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.66866

1.66866

This result is a golden number, very near to the proton mass

8^2+10^3 (((((((sum (0.5^(n(n+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^n)/((1-0.5)*(1-0.5^3)(1-0.5^(2n+1)))), n = 0 to 5))))))^1/6

Input interpretation:

$$8^2+10^3\sqrt[6]{\sum_{n=0}^{5} 0.5^{n\times(n+1)/2}\,(1+0.5)\left(1+0.5^2\right)\times\frac{1+0.5^n}{(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n+1}\right)}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1732.66

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

(((8^2+10^3 ((((sum (0.5^(n(n+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^n)/((1-0.5)*(1-0.5^3)(1-0.5^(2n+1)))), n = 0 to 5))))^1/6)))^1/3

Input interpretation:

$$\sqrt[3]{8^2+10^3 \sqrt[6]{\sum_{n=0}^{5} 0.5^{n\times(n+1)/2}(1+0.5)(1+0.5^2)\times \frac{1+0.5^n}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0108

This result is very near to the value of black hole entropy 12,1904

2*(((8^2+10^3 ((((sum (0.5^(n(n+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^n)/((1-0.5)*(1-0.5^3)(1-0.5^(2n+1)))), n = 0 to 5))))^1/6)))^1/3

Input interpretation:

$$2\sqrt[3]{8^2+10^3 \sqrt[6]{\sum_{n=0}^{5} 0.5^{n\times(n+1)/2}(1+0.5)(1+0.5^2)\times \frac{1+0.5^n}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0216

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

(((8^2+10^3 ((((sum (0.5^(n(n+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^n)/((1-0.5)*(1-0.5^3)(1-0.5^(2n+1)))), n = 0 to 5))))^1/6)))^1/15

Input interpretation:

$$\sqrt[15]{8^2+10^3 \sqrt[6]{\sum_{n=0}^{5} 0.5^{n\times(n+1)/2}(1+0.5)(1+0.5^2)\times \frac{1+0.5^n}{(1-0.5)(1-0.5^3)(1-0.5^{2n+1})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64405

$1.64405 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

For q = 0.5 and n = 2, we develop the above formula in the following way:

31*(((0.5^(2(2+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^2)))/((((1-0.5)*(1-0.5^3)(1-0.5^(2*2+1)))))

Input:

$$31 \times \frac{0.5^{2\times(2+1)/2}(1+0.5)(1+0.5^2)(1+0.5^2)}{(1-0.5)(1-0.5^3)(1-0.5^{2\times 2+1})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

21.428571428571428571428571428571428571428571428571428571428571428571...

Open code

This result is very near to the previous result 21.588, and very near to the black hole entropy 21,7656

1+((-0.0864055+(((0.5^(2(2+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^2)))/((((1-0.5)*(1-0.5^3)(1-0.5^(2*2+1)))))

Where 0.0864055 is the result of previous mock theta function

Input interpretation:

$$1 + \left(-0.0864055 + \frac{0.5^{2\times(2+1)/2}(1+0.5)(1+0.5^2)(1+0.5^2)}{(1-0.5)(1-0.5^3)(1-0.5^{2\times 2+1})}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.6048387396313364055299539170506912442396313364055299539170...

Open code

This result is a golden number, very near to the electric charge of positron

2*8^2+10^3 ((((((1+((-0.0864055+(((0.5^(2(2+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^2)))/((((1-0.5)*(1-0.5^3)(1-0.5^(2*2+1))))))))

Input interpretation:

$$2 \times 8^2 + 10^3 \left(1 + \left(-0.0864055 + \frac{0.5^{2\times(2+1)/2}(1+0.5)(1+0.5^2)(1+0.5^2)}{(1-0.5)(1-0.5^3)(1-0.5^{2\times 2+1})}\right)\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1732.8387396313364055299539170506912442396313364055299539170...

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

((((((((([((((2*8^2+10^3 (((1+((-0.0864055+(((0.5^(2(2+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^2)))/((((1-0.5)*(1-0.5^3)(1-0.5^(2*2+1)))))]))))))))^1/3

Input interpretation:

$$\sqrt[3]{2\times 8^2+10^3\left(1+\left(-0.0864055+\frac{0.5^{2\times(2+1)/2}(1+0.5)(1+0.5^2)(1+0.5^2)}{(1-0.5)(1-0.5^3)(1-0.5^{2\times 2+1})}\right)\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

12.0112...

This result is very near to the value of black hole entropy 12,1904

2((((((((([((((2*8^2+10^3 (((1+((-0.0864055+(((0.5^(2(2+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^2)))/((((1-0.5)*(1-0.5^3)(1-0.5^(2*2+1)))))]))))))))^1/3

Input interpretation:

$$2\sqrt[3]{2\times 8^2+10^3\left(1+\left(-0.0864055+\frac{0.5^{2\times(2+1)/2}(1+0.5)(1+0.5^2)(1+0.5^2)}{(1-0.5)(1-0.5^3)(1-0.5^{2\times 2+1})}\right)\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

24.0224...

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((([((((2*8^2+10^3 (((1+((-0.0864055+(((0.5^(2(2+1)/2) *(1+0.5)*(1+0.5^2)(1+0.5^2)))/((((1-0.5)*(1-0.5^3)(1-0.5^(2*2+1)))))]))))))))^1/15

Input interpretation:

$$\sqrt[15]{2\times 8^2+10^3\left(1+\left(-0.0864055+\frac{0.5^{2\times(2+1)/2}(1+0.5)(1+0.5^2)(1+0.5^2)}{(1-0.5)(1-0.5^3)(1-0.5^{2\times 2+1})}\right)\right)}$$

Open code

Result:

- Fewer digits
- More digits

1.644058284466750047206491612275236799861913416508532872238...

$1.64405828446675... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{29+\cfrac{1}{1+\cfrac{1}{26+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{3+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{\dots}}}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$\frac{3080345500}{19234581\pi^4} \approx 1.64405828446675005919 7$

$\frac{-100+221\pi-283\pi^2}{7(41-99\pi+8\pi^2)} \approx 1.64405828446675004670 67$

$\frac{2826924857\pi}{5401904815} \approx 1.64405828446675004718693$

Now, for

$$\phi(q) = \sum_{n\geq 0} \frac{(-1)^n q^{n^2} (q;q^2)_n}{(-q;q)_{2n}}$$

We obtain:

sum for n >= 0 of (-1)^n q^n^2 (1-q)(1-q^3)...(1-q^(2n-1))/((1+q)(1+q^2)...(1+q^(2n)))

sum (-1)^n q^n^2 (1-q)(1-q^3)(1-q^(2n-1))/((1+q)(1+q^2)(1+q^(2n))), n = 0 to 5

Result:

$$\sum_{n=0}^{5} \frac{(-1)^n q^{n^2} ((1-q)(1-q^3)(1-q^{2n-1}))}{(1+q)(1+q^2)(1+q^{2n})} = \frac{1}{2(q+1)(q^2+1)^2} (1-q)(1-q^3)\left(\frac{(q-1)(q^2+1)}{q} - \frac{2(q^2+1)(q^3-1)q^4}{q^4+1} - \frac{2(q^2+1)(1-q^9)q^{25}}{q^{10}+1} - \frac{2(q^2+1)(q^7-1)q^{16}}{q^8+1} + \frac{2(q^5-1)q^9}{q^4-q^2+1} + 2(q-1)q\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Sum:

$$\sum_{n=0}^{5} \frac{(-1)^n q^{n^2} ((1-q)(1-q^3)(1-q^{2n-1}))}{(q+1)(q^2+1)(q^{2n}+1)} = -\frac{(1-q)^2(1-q^3)q}{(q+1)(q^2+1)^2} + \frac{\left(1-\frac{1}{q}\right)(1-q)(1-q^3)}{2(q+1)(q^2+1)} + \frac{(1-q)(1-q^3)^2 q^4}{(q+1)(q^2+1)(q^4+1)} - \frac{(1-q)(1-q^3)(1-q^9)q^{25}}{(q+1)(q^2+1)(q^{10}+1)} + \frac{(1-q)(1-q^3)(1-q^7)q^{16}}{(q+1)(q^2+1)(q^8+1)} - \frac{(1-q)(1-q^3)(1-q^5)q^9}{(q+1)(q^2+1)(q^6+1)}$$

For q = 0.5 and n = 2, we develop the above formula in the following way:

((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) /
((((1+0.5)(1+0.5^2)(1+0.5^(2*2)))

Input:

$$\frac{(-1)^2 \times 0.5^{2^2} ((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1}))}{(1+0.5)(1+0.5^2)(1+0.5^{2\times 2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.012009803921568627450980392156862745098039215686274509803...

Open code

10^3*12^2((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) /
((((1+0.5)(1+0.5^2)(1+0.5^(2*2)))

Input:

$$10^3 \times 12^2 \times \frac{(-1)^2 \times 0.5^{2^2} ((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1}))}{(1+0.5)(1+0.5^2)(1+0.5^{2\times 2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1729.411764705882352941176470588235294117647058823529411764...

Open code

This result is very near to the mass of candidate glueball $f_0(1710)$ meson. Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729

(((((10^3*12^2((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)(1+0.5^2)(1+0.5^(2*2)))))))^1/3

Input:

$$\sqrt[3]{10^3 \times 12^2 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times2}\right)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

12.0033...

This result is very near to the value of black hole entropy 12,1904

2*(((((10^3*12^2((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)(1+0.5^2)(1+0.5^(2*2)))))))^1/3

Input:

$$2\sqrt[3]{10^3 \times 12^2 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times2}\right)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

24.0065...

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

(((((10^3*12^2((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)(1+0.5^2)(1+0.5^(2*2)))))))^1/15

Input:

$$\sqrt[15]{10^3 \times 12^2 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times 2}\right)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1.643841324367798515454832097542381144404664502737971722143...

$1.643841324367798515 4... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

We have also that:

240 * 0.0864055 / ((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)(1+0.5^2)(1+0.5^(2*2)))

Where 0.0864055 is the result of a previous mock theta function

Input interpretation:

$$240 \times \frac{0.0864055}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times 2}\right)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1726.699297959183673469387755102040816326530612244897959183...

Open code

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

24/(21*5) * 0.0864055 / ((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)(1+0.5^2)(1+0.5^(2*2)))

Input interpretation:

$$\frac{24}{21 \times 5} \times \frac{0.0864055}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times 2}\right)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive
Result:
- More digits

1.6444755218658892128279883381924198250728862973760932944 60...

Open code

$1.6444755... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

((156871447Pi)/(2191631483)) * 0.0864055 / ((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)(1+0.5^2)(1+0.5^(2*2)))

Input interpretation:

$$\frac{156871447\pi}{2191631483} \times \frac{0.0864055}{\frac{(-1)^2 \times 0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times2-1})\right)}{(1+0.5)(1+0.5^2)(1+0.5^{2\times2})}}$$

Open code

Enlarge Data Customize A Plaintext Interactive
Result:
- Fewer digits
- More digits

1.6178256454127754131295413721598279949863626267456342 00865...

1.6178256454127754131295413721598279949863626267456342

This result is a very good approximation to the value of the golden ratio 1,618033988749...

Series representations:
- More

$$\frac{0.0864055\,(156871447\pi)}{\frac{\left((-1)^2\,0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times2-1})\right)\right)2191631483}{(1+0.5)(1+0.5^2)(1+0.5^{2\times2})}} = 2.05988\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{0.0864055\,(156871447\pi)}{\frac{\left((-1)^2\,0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times2-1})\right)\right)2191631483}{(1+0.5)(1+0.5^2)(1+0.5^{2\times2})}} = -1.02994 + 1.02994\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}$$

Open code

$$\frac{0.0864055\,(156871447\pi)}{\frac{\left((-1)^2\,0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times2-1})\right)\right)2191631483}{(1+0.5)(1+0.5^2)(1+0.5^{2\times2})}} = 0.51497\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}$$

Open code

Integral representations:

- More

$$\frac{0.0864055\,(156\,871\,447\,\pi)}{\frac{\left((-1)^2\,0.5^{2^2}\,((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1}))\right)2\,191\,631\,483}{(1+0.5)(1+0.5^2)(1+0.5^{2\times 2})}} = 1.02994\int_0^\infty \frac{1}{1+t^2}\,dt$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{0.0864055\,(156\,871\,447\,\pi)}{\frac{\left((-1)^2\,0.5^{2^2}\,((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1}))\right)2\,191\,631\,483}{(1+0.5)(1+0.5^2)(1+0.5^{2\times 2})}} = 2.05988\int_0^1 \sqrt{1-t^2}\,dt$$

Open code

$$\frac{0.0864055\,(156\,871\,447\,\pi)}{\frac{\left((-1)^2\,0.5^{2^2}\,((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1}))\right)2\,191\,631\,483}{(1+0.5)(1+0.5^2)(1+0.5^{2\times 2})}} = 1.02994\int_0^\infty \frac{\sin(t)}{t}\,dt$$

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{4+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{19+\cfrac{1}{11+\cfrac{1}{1+\cfrac{1}{\dots}}}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\frac{1-9071\,\mathcal{K}_{-1}}{2\,(23\,\mathcal{K}_{-1}-4933)} \approx 1.61782564541277541\,25837$$

$$\frac{573\,669\,041\,\pi}{1\,113\,985\,583} \approx 1.617825645412775413\,35752$$

$$\frac{-900 - 62\,\pi + 821\,\pi^2}{2\,(-196 - 43\,\pi + 253\,\pi^2)} \approx 1.617825645412775413\,24379$$

Or:

Input interpretation:

$$\frac{1}{4}\left(\frac{24}{105} + \frac{24}{106} + \frac{24}{107} + \frac{24}{109}\right) \times \frac{0.0864055}{\frac{(-1)^2 \times 0.5^{2^2}\,((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1}))}{(1+0.5)(1+0.5^2)(1+0.5^{2\times 2})}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  1.617825645412775411638688246013637558389843317766041441130...

Open code

1.6178256454127754.....

This result is a very good approximation to the value of the golden ratio 1,618033988749...

Now, from the above formula, performing the summation, we obtain:

sum (-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^(2n))), n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(-1)^n\, 0.5^{n^2}\,((1-0.5)(1-0.5^3)(1-0.5^{2n-1}))}{(1+0.5)(1+0.5^2)(0.5^{2n}+1)} = -\frac{1\,482\,215\,485\,125\,543}{9\,767\,179\,255\,808\,000}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits
  −0.151754713034897114916091824214994179098260514446614966635...

-11*sum (((-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))) / ((1+0.5)(1+0.5^2)(1+0.5^(2n))), n = 0 to 5

Input interpretation:

$$-11\sum_{n=0}^{5}\frac{(-1)^n \times 0.5^{n^2}\left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2n}\right)}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.6693

1.6693

This result is a golden number, very near to the proton mass

8^2+10^3 * -11*sum (((-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))) / ((1+0.5)(1+0.5^2)(1+0.5^(2n))), n = 0 to 5

Input interpretation:

$$8^2+10^3\times(-11)\sum_{n=0}^{5}\frac{(-1)^n \times 0.5^{n^2}\left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2n}\right)}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1733.3

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

((((8^2+10^3 * -11*sum (((-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))) / ((1+0.5)(1+0.5^2)(1+0.5^(2n))), n = 0 to 5)))))^1/3

Input interpretation:

$$\sqrt[3]{8^2+10^3\times(-11)\sum_{n=0}^{5}\frac{(-1)^n \times 0.5^{n^2}\left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2n}\right)}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0123

This result is very near to the value of black hole entropy 12,1904

2*((((8^2+10^3 * -11*sum (((-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))) / ((1+0.5)(1+0.5^2)(1+0.5^(2n))), n = 0 to 5)))))^1/3

Input interpretation:

$$2\sqrt[3]{8^2+10^3\times(-11)\sum_{n=0}^{5}\frac{(-1)^n \times 0.5^{n^2}\left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2n-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2n}\right)}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0245

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((8^2+10^3 * -11*sum (((-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))) / ((1+0.5)(1+0.5^2)(1+0.5^(2n))), n = 0 to 5)))))^1/15

Input interpretation:

$$\sqrt[15]{8^2 + 10^3 \times (-11) \sum_{n=0}^{5} \frac{(-1)^n \times 0.5^{n^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2n-1})\right)}{(1+0.5)(1+0.5^2)(1+0.5^{2n})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64409

$$1.64409 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

Continued fraction:

- Linear form

$$1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{4 + \cfrac{1}{3 + \cfrac{1}{1 + \cfrac{1}{12 + \cfrac{1}{5 + \cfrac{1}{1 + \cfrac{1}{2 + \cfrac{1}{3 + \cfrac{1}{\cdots}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\frac{\pi^2}{6} \approx 1.64493406$$

$$\frac{97}{59} \approx 1.644067796$$

$$\pi \text{ root of } 3x^3 + 3x - 2 \text{ near } x = 0.523336 \approx 1.64410698$$

Moreover, we obtain:

-(25Pi)/8 * 1.0864055* sum (((-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))) / ((1+0.5)(1+0.5^2)(1+0.5^(2n))), n = 0 to 5))))

Input interpretation:

$$\left(-\frac{1}{8}(25\pi)\right)\times 1.0864055\sum_{n=0}^{5}\frac{(-1)^n\times 0.5^{n^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2n-1})\right)}{(1+0.5)(1+0.5^2)(1+0.5^{2n})}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.61858

1.61858

This result is a very good approximation to the value of the golden ratio 1,618033988749...

Now, we have:

$$\psi(q)=\sum_{n\geq 0}\frac{(-1)^n q^{(n+1)^2}(q;q^2)_n}{(-q;q)_{2n+1}}$$

That is:

Sum_{n >= 0} (-1)^n q^(n+1)^2 (1-q)*(1-q^3)...(1-q^(2n-1)) /((1+q)*(1+q^2)...(1+q^(2n+1)))

We obtain:

sum (-1)^n q^(n+1)^2 (1-q)*(1-q^3)(1-q^(2n-1)) /((1+q)*(1+q^2)(1+q^(2n+1))), n = 0 to 5

Result:

$$\sum_{n=0}^{5}\frac{(-1)^n q^{(n+1)^2}\left((1-q)(1-q^3)(1-q^{2n-1})\right)}{(1+q)(1+q^2)(1+q^{2n+1})}=$$
$$\frac{\left(1-\frac{1}{q}\right)(1-q)(1-q^3)q}{(q+1)^2(q^2+1)}-\frac{(1-q)^2(1-q^3)q^4}{(q+1)(q^2+1)(q^3+1)}+\frac{(1-q)(1-q^3)^2q^9}{(q+1)(q^2+1)(q^5+1)}-$$
$$\frac{(1-q)(1-q^3)(1-q^9)q^{36}}{(q+1)(q^2+1)(q^{11}+1)}+\frac{(1-q)(1-q^3)(1-q^7)q^{25}}{(q+1)(q^2+1)(q^9+1)}-\frac{(1-q)(1-q^3)(1-q^5)q^{16}}{(q+1)(q^2+1)(q^7+1)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

$$\sum_{n=0}^{5}\frac{(-1)^n q^{(n+1)^2}\left((1-q)(1-q^3)(1-q^{2n-1})\right)}{(1+q)(1+q^2)(1+q^{2n+1})}=$$
$$\frac{1}{(q+1)^2(q^2+1)}(1-q)q(1-q^3)\left(\frac{(q-1)q^3}{q^2-q+1}-\frac{(q+1)(1-q^9)q^{35}}{q^{11}+1}+\right.$$
$$\left.\frac{(q+1)(1-q^7)q^{24}}{q^9+1}-\frac{(q+1)(1-q^5)q^{15}}{q^7+1}+\frac{(q+1)(1-q^3)q^8}{q^5+1}-\frac{1}{q}+1\right)$$

sum (-1)^n 0.5^(n+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2n-1))
/((1+0.5)*(1+0.5^2)(1+0.5^(2n+1))), n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(-1)^n\, 0.5^{(n+1)^2}\, ((1-0.5)(1-0.5^3)(1-0.5^{2n-1}))}{(1+0.5)(1+0.5^2)(0.5^{2n+1}+1)} = -\frac{7164369962501918299}{85416213810606243840}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

−0.083875995468348762594531648764793719791445064035269843 63...

Open code

-1+sum (-1)^n 0.5^(n+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2n-1))
/((1+0.5)*(1+0.5^2)(1+0.5^(2n+1))), n = 0 to 5

Input interpretation:

$$-1+\sum_{n=0}^{5}(-1)^n \times 0.5^{(n+1)^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5)(1+0.5^2)(1+0.5^{2n+1})}\right)$$

Enlarge Data Customize A Plaintext Interactive

Result:

−1.08388

((((-1+sum (-1)^n 0.5^(n+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2n-1))
/((1+0.5)*(1+0.5^2)(1+0.5^(2n+1))), n = 0 to 5))))^6

Input interpretation:

$$\left(-1+\sum_{n=0}^{5}(-1)^n \times 0.5^{(n+1)^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5)(1+0.5^2)(1+0.5^{2n+1})}\right)\right)^6$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.62135

1.62135

This result is a golden number

27*4+10^3((((-1+sum (-1)^n 0.5^(n+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2n-1))
/((1+0.5)*(1+0.5^2)(1+0.5^(2n+1))), n = 0 to 5))))^6

Input interpretation:

$$27\times4+10^3\left(-1+\sum_{n=0}^{5}(-1)^n \times 0.5^{(n+1)^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5)(1+0.5^2)(1+0.5^{2n+1})}\right)\right)^6$$

Enlarge Data Customize A Plaintext Interactive

Result:

1729.35

This result is very near to the mass of candidate glueball $f_0(1710)$ meson. Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–

Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729

[(((((27*4+10^3((((-1+sum (-1)^n 0.5^(n+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2n-1)) /((1+0.5)*(1+0.5^2)(1+0.5^(2n+1))), n = 0 to 5))))^6)))))]^1/3

Input interpretation:

$$\left(27\times 4+10^3\left(-1+\sum_{n=0}^{5}(-1)^n\times 0.5^{(n+1)^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5)(1+0.5^2)(1+0.5^{2n+1})}\right)\right)^6\right)\text{^}(1/3)$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0031

This result is very near to the value of black hole entropy 12,1904

2[(((((27*4+10^3((((-1+sum (-1)^n 0.5^(n+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2n-1)) /((1+0.5)*(1+0.5^2)(1+0.5^(2n+1))), n = 0 to 5))))^6)))))]^1/3

Input interpretation:

$$2\left(27\times 4+10^3\left(-1+\sum_{n=0}^{5}(-1)^n\times 0.5^{(n+1)^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5)(1+0.5^2)(1+0.5^{2n+1})}\right)\right)^6\right)\text{^}(1/3)$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0063

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

[(((((27*4+10^3((((-1+sum (-1)^n 0.5^(n+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2n-1)) /((1+0.5)*(1+0.5^2)(1+0.5^(2n+1))), n = 0 to 5))))^6)))))]^1/15

Input interpretation:

$$\left(27\times 4+10^3\left(-1+\sum_{n=0}^{5}(-1)^n\times 0.5^{(n+1)^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5)(1+0.5^2)(1+0.5^{2n+1})}\right)\right)^6\right)\text{^}(1/15)$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64384

$1.64384 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

For q = 0.5 and n = 2, we develop the above formula in the following way:

(((((-1)^2 0.5^(2+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)*(1+0.5^2)(1+0.5^(2*2+1))))))

Input:

$$\frac{(-1)^2 \times 0.5^{(2+1)^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times 2+1}\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

  0.000386679292929292929292929292929292929292929292929292929...

Open code

5 * (0.0864055) / (((((-1)^2 0.5^(2+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)*(1+0.5^2)(1+0.5^(2*2+1))))))

Input interpretation:

$$5 \times \frac{0.0864055}{\frac{(-1)^2 \times 0.5^{(2+1)^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times 2+1}\right)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

  1117.2760163265306122448979591836734693877551020408163265306...

Open code

This result 1117.276 is very near to the rest mass of the Lambda baryon 1115.683±0.006

2*((((((5 * (0.0864055) / (((((-1)^2 0.5^(2+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)*(1+0.5^2)(1+0.5^(2*2+1))))))))))))^1/3

Input interpretation:

$$2 \sqrt[3]{5 \times \frac{0.0864055}{\frac{(-1)^2 \times 0.5^{(2+1)^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times 2+1}\right)}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

20.7531...

This result is very near to the value of black hole entropy 20,5520

((((((5 * (0.0864055) / (((((-1)^2 0.5^(2+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)*(1+0.5^2)(1+0.5^(2*2+1)))))))))))^1/14

Input interpretation:

$$\sqrt[14]{5 \times \frac{0.0864055}{\frac{(-1)^2 \times 0.5^{(2+1)^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5)(1+0.5^2)(1+0.5^{2\times 2+1})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.65092...

1.65092 is very near to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3 = 1164,2696$ i.e. 1,65578...

(24*8)/(5^2) * 0.0864055 / (((((-1)^2 0.5^(2+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)*(1+0.5^2)(1+0.5^(2*2+1))))))

Input interpretation:

$$\frac{24 \times 8}{5^2} \times \frac{0.0864055}{\frac{(-1)^2 \times 0.5^{(2+1)^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5)(1+0.5^2)(1+0.5^{2\times 2+1})}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1716.1359610775510204081632653061224489795918367346938775 51...

Open code

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

[(((((((24*8)/(5^2) * 0.0864055 / (((((-1)^2 0.5^(2+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)*(1+0.5^2)(1+0.5^(2*2+1))))))))]^1/3

Input interpretation:

$$\sqrt[3]{\frac{24 \times 8}{5^2} \times \frac{0.0864055}{\frac{(-1)^2 \times 0.5^{(2+1)^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5)(1+0.5^2)(1+0.5^{2\times 2+1})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive
Result:
- More digits
11.9725...

This result is very near to the value of black hole entropy 12,1904

2[(((((((24*8)/(5^2) * 0.0864055 / (((((-1)^2 0.5^(2+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)*(1+0.5^2)(1+0.5^(2*2+1))))))))]^1/3

Input interpretation:

$$2\sqrt[3]{\frac{24\times 8}{5^2}\times\frac{0.0864055}{\frac{(-1)^2\times 0.5^{(2+1)^2}\left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times 2+1}\right)}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive
Result:
- More digits
23.9449...

This result is very near to the value of black hole entropy 23,9078

[(((((((24*8)/(5^2) * 0.0864055 / (((((-1)^2 0.5^(2+1)^2 (1-0.5)*(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5)*(1+0.5^2)(1+0.5^(2*2+1))))))))]^1/15

Input interpretation:

$$\sqrt[15]{\frac{24\times 8}{5^2}\times\frac{0.0864055}{\frac{(-1)^2\times 0.5^{(2+1)^2}\left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2\times 2+1}\right)}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive
Result:
- More digits
1.64300...

$1.64300... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Now, we have:

$$\lambda(q) = \sum_{n\geq 0} \frac{(-1)^n q^n (q;q^2)_n}{(-q;q)_n}$$

That is:

Sum_{n >= 0} (-q)^n (1-q)(1-q^3)...(1-q^(2n-1))/((1+q)(1+q^2)...(1+q^n))

sum (-q)^n (1-q)(1-q^3)(1-q^(2n-1))/((1+q)(1+q^2)(1+q^n)), n = 0 to 5

Result:

$$\sum_{n=0}^{5} \frac{(-q)^n (1-q)(1-q^3)(1-q^{2n-1})}{(1+q)(1+q^2)(1+q^n)} = \Big((q-1)^3 (q^2+q+1)^2 \big(2q^{20} - 2q^{19} + 2q^{18} + 2q^{17} + 6q^{14} - 6q^{13} + 10q^{12} - 7q^{11} + 10q^{10} - 13q^9 + 22q^8 - 25q^7 + 25q^6 - 21q^5 + 17q^4 - 10q^3 + 5q^2 - 2q + 1\big)\Big) / \big(2q(q+1)^2(q^2+1)^2(q^2-q+1)(q^4+1)(q^4-q^3+q^2-q+1)\big)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Sum:

$$\sum_{n=0}^{5} \frac{(1-q)(1-q^3)(-q)^n (1-q^{2n-1})}{(q+1)(q^2+1)(q^n+1)} =$$

$$\frac{(1-q)(1-q^3)^2 q^2}{(q+1)(q^2+1)^2} - \frac{(1-q)^2(1-q^3)q}{(q+1)^2(q^2+1)} + \frac{\left(1-\frac{1}{q}\right)(1-q)(1-q^3)}{2(q+1)(q^2+1)} - \frac{(1-q)(1-q^3)(1-q^5)q^3}{(q+1)(q^2+1)(q^3+1)} - \frac{(1-q)(1-q^3)(1-q^9)q^5}{(q+1)(q^2+1)(q^5+1)} + \frac{(1-q)(1-q^3)(1-q^7)q^4}{(q+1)(q^2+1)(q^4+1)}$$

Open code

We obtain:

sum (-0.5)^n (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^n)), n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(1-0.5)(1-0.5^3)(-0.5)^n (1-0.5^{2n-1})}{(1+0.5)(1+0.5^2)(0.5^n+1)} = -\frac{17226587}{129254400}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

$-0.13327660025500099029510794216676569617746088334323628441\ldots$

Open code

Multiplying by 10^3 and changing the sign, we obtain 133,276, result very near to the rest mass of Pion π^0: 134.9766(6) MeV/c^2

-(-1 + 0.0864055 / sum (-0.5)^n (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^n)), n = 0 to 5

Input interpretation:

$$-\left(-1+\frac{0.0864055}{\sum_{n=0}^{5}(-0.5)^n(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)(1+0.5^n)}}\right)$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64832

$1.64832 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

24*4 + 10^3 * -(-1 + 0.0864055 / sum (-0.5)^n (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^n)), n = 0 to 5

Input interpretation:

$$24\times 4+10^3\times(-1)\left(-1+\frac{0.0864055}{\sum_{n=0}^{5}(-0.5)^n(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)(1+0.5^n)}}\right)$$

Enlarge Data Customize A Plaintext Interactive

Result:

1744.32

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

[(((24*4 + 10^3*-(-1 + 0.0864055 / sum (((-0.5)^n (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^n))), n = 0 to 5)))]^1/3

Input interpretation:

$$\sqrt[3]{24\times 4+10^3\times(-1)\left(-1+\frac{0.0864055}{\sum_{n=0}^{5}(-0.5)^n(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)(1+0.5^n)}}\right)}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0377

This result is very near to the value of black hole entropy 12,1904

2[(((24*4 + 10^3*-(-1 + 0.0864055 / sum (((-0.5)^n (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^n))), n = 0 to 5)))]^1/3

Input interpretation:

$$2\left(24\times 4+10^3\times(-1)\left(-1+\frac{0.0864055}{\sum_{n=0}^{5}(-0.5)^n\,(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^n\right)}}\right)\right)\text{^}(1/3)$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0753

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

[(((24*4 + 10^3*-(-1 + 0.0864055 / sum (((-0.5)^n (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^n))), n = 0 to 5)))]^1/15

Input interpretation:

$$\sqrt[15]{24\times 4+10^3\times(-1)\left(-1+\frac{0.0864055}{\sum_{n=0}^{5}(-0.5)^n\,(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^n\right)}}\right)}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64478

We note that this result is $\cong \frac{\pi^2}{6} = 1.6449$ ... Indeed, we have that:

[[[6*((24*4 + 10^3*-(-1 + 0.0864055 / sum (((-0.5)^n (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^n))), n = 0 to 5))))^1/15]]]^1/2

Input interpretation:

$$\sqrt{\left(6\left(24\times 4+10^3\times(-1)\left(-1+\frac{0.0864055}{\sum_{n=0}^{5}(-0.5)^n(1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5)(1+0.5^2)(1+0.5^n)}}\right)\right)\right)\text{^}(1/15)}$$

Enlarge Data Customize A Plaintext Interactive

Result:

3.14145

3.14145

Possible closed forms:

- More

$\pi \approx 3.14159265$

Enlarge Data Customize A Plaintext Interactive

$\sqrt[3]{31} \approx 3.14138065$

$\frac{311}{99} \approx 3.141414141$

This result is a very good approximation to π

For q = 0.5 and n = 2, we develop the above formula in the following way:

(((-0.5)^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1))) / (((1+0.5)(1+0.5^2)(1+0.5^2)))

Input:

$$\frac{(-0.5)^2(1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})}{(1+0.5)(1+0.5^2)(1+0.5^2)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.0408333333333333333333333333333333333333333333333333333...

Open code

10^3 ((((((1.0864055 / (((-0.5)^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1))) / (((1+0.5)(1+0.5^2)(1+0.5^2))))))))^1/6

Input interpretation:

$$10^3 \sqrt[6]{\frac{1.0864055}{\frac{(-0.5)^2 (1-0.5)(1-0.5^3)(1-0.5^{2\times2-1})}{(1+0.5)(1+0.5^2)(1+0.5^2)}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1727.81...

This result is very near to the mass of candidate glueball $f_0(1710)$ meson. Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729

((((((10^3 ((((((1.0864055 / (((-0.5)^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1))) / (((1+0.5)(1+0.5^2)(1+0.5^2))))))))^1/6)))))^1/3

Input interpretation:

$$\sqrt[3]{10^3 \sqrt[6]{\frac{1.0864055}{\frac{(-0.5)^2 (1-0.5)(1-0.5^3)(1-0.5^{2\times2-1})}{(1+0.5)(1+0.5^2)(1+0.5^2)}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

11.99956...

This result is very near to the value of black hole entropy 12,1904

2((((((10^3 ((((((1.0864055 / (((-0.5)^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1))) / (((1+0.5)(1+0.5^2)(1+0.5^2))))))))^1/6)))))^1/3

Input interpretation:

$$2\sqrt[3]{10^3 \sqrt[6]{\frac{1.0864055}{\frac{(-0.5)^2 (1-0.5)(1-0.5^3)(1-0.5^{2\times2-1})}{(1+0.5)(1+0.5^2)(1+0.5^2)}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

23.99912...

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((10^3 ((((((1.0864055 / (((-0.5)^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1))) / (((1+0.5)(1+0.5^2)(1+0.5^2))))))))^1/6)))))^1/15

Input interpretation:

$$\sqrt[15]{10^3 \sqrt[6]{\frac{1.0864055}{\frac{(-0.5)^2 (1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})}{(1+0.5)(1+0.5^2)(1+0.5^2)}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.643740...

$1.643740... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Now, we have:

$$2\mu(q) = \sum_{n\geq 0} \frac{(-1)^n q^{n+1}(1+q^n)(q;q^2)_n}{(-q;q)_{n+1}}$$

That is:

```
1 + Sum_{n >= 0} (-1)^n q^(n+1) (1+q^n) (1-q)(1-q^3)...(1-q^(2n-
       1))/((1+q)(1+q^2)...(1+q^(n+1)))
```

1 + sum (-1)^n q^(n+1)(1+q^n)(1-q)(1-q^3)(1-q^(2n-1))/((1+q)(1+q^2)(1+q^(n+1))), n = 0 to 5

Input interpretation:

$$1 + \sum_{n=0}^{5} (-1)^n q^{n+1} (1+q^n)(1-q)(1-q^3) \times \frac{1-q^{2n-1}}{(1+q)(1+q^2)(1+q^{n+1})}$$

Enlarge Data Customize A Plaintext Interactive

Result:

$$\left((q^2+q+1)^2 \left(q^{28} - q^{27} + q^{26} + q^{24} + q^{23} + 4q^{20} - 2q^{19} + 2q^{18} + 6q^{16} - 8q^{15} + 10q^{14} - 7q^{13} + 9q^{12} - 10q^{11} + 13q^{10} - 14q^9 + 18q^8 - 18q^7 + 13q^6 - 7q^5 + 9q^4 - 12q^3 + 11q^2 - 6q + 2\right)(q-1)^3\right) / \left((q+1)^2 (q^2+1)^2 (q^2-q+1)(q^4+1)(q^4-q^2+1)(q^4-q^3+q^2-q+1)\right) + 1$$

For q = 0.5 we obtain:

1 + sum (-1)^n 0.5^(n+1)(1+0.5^n)(1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^(n+1))), n = 0 to 5

Input interpretation:

$$1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n+1}\left(1+0.5^n\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{n+1}\right)}$$

Enlarge Data Customize A Plaintext Interactive

Result:

0.826602

2 * ((((1 + sum (-1)^n 0.5^(n+1)(1+0.5^n)(1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^(n+1))), n = 0 to 5))))

Input interpretation:

$$2\left(1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n+1}\left(1+0.5^n\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{n+1}\right)}\right)$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.6532

1.6532 is very near to the 14th root of the following Ramanujan's class invariant $Q=\left(G_{505}/G_{101/5}\right)^3$ = 1164,2696 i.e. 1,65578...

24*3 + 10^3 * 2 *((((1 + sum (-1)^n 0.5^(n+1)(1+0.5^n)(1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^(n+1))), n = 0 to 5))))

Input interpretation:

$$24\times 3+10^3\times 2\left(1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n+1}\left(1+0.5^n\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{n+1}\right)}\right)$$

Enlarge Data Customize A Plaintext Interactive

Result:

1725.2

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

[24*3 + 10^3 * 2 *((((1 + sum (-1)^n 0.5^(n+1)(1+0.5^n)(1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^(n+1))), n = 0 to 5))))]^1/3

Input interpretation:

$$\left(24\times 3+10^3\times 2\left(1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n+1}\left(1+0.5^n\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{n+1}\right)}\right)\right)\hat{}\,(1/3)$$

Enlarge Data Customize A Plaintext Interactive

Result:

11.9935

This result is very near to the value of black hole entropy 12,1904

2*[24*3 + 10^3 * 2 *((((1 + sum (-1)^n 0.5^(n+1)(1+0.5^n)(1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^(n+1))), n = 0 to 5))))]^1/3

Input interpretation:

$$2\left(24\times 3+10^3\times 2\left(1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n+1}\left(1+0.5^n\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{n+1}\right)}\right)\right)\hat{}\,(1/3)$$

Enlarge Data Customize A Plaintext Interactive

Result:

23.987

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

[24*3 + 10^3 * 2 *((((1 + sum (-1)^n 0.5^(n+1)(1+0.5^n)(1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5)(1+0.5^2)(1+0.5^(n+1))), n = 0 to 5))))]^1/15

Input interpretation:

$$\left(24\times 3+10^3\times 2\left(1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n+1}\left(1+0.5^n\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2n-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{n+1}\right)}\right)\right)\hat{}\,(1/15)$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64357

$1.64357 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

For q = 0.5 and n = 2, we develop the above formula in the following way:

1 + (((-1)^2 0.5^(2+1)(1+0.5^2)(1-0.5)(1-0.5^3)(1-0.5^(2*2-1))/((1+0.5)(1+0.5^2)(1+0.5^(2+1)))

Input:

$$1+(-1)^2\times 0.5^{2+1}\left(1+0.5^2\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2\times 2-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2+1}\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.028356481481481481481481481481481481481481481481481481481...

$1.028356\overline{481}$ (period 3)

Input:

$$1+\frac{(-1)^2\times 0.5^{2+1}\left(1+0.5^2\right)(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2+1}\right)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.028356481481481481481481481481481481481481481481481481481...

10^3*((((1 + (((-1)^2 0.5^(2+1)(1+0.5^2)(1-0.5)(1-0.5^3)(1-0.5^(2*2-1))))/((((1+0.5)(1+0.5^2)(1+0.5^(2+1)))

Input:

$$10^3\left(1+\frac{(-1)^2\times 0.5^{2+1}\left(1+0.5^2\right)(1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2+1}\right)}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1028.356481481481481481481481481481481481481481481481481481...

Open code

Repeating decimal:

$1028.356\overline{481}$ (period 3)

This result is very near to the rest mass of Phi meson 1019.445±0.020

((((1 + (((-1)^2 0.5^(2+1)(1+0.5^2)(1-0.5)(1-0.5^3)(1-0.5^(2*2-1))/((1+0.5)(1+0.5^2)(1+0.5^(2+1)))))))^18

Input:

$$\left(1+(-1)^2\times 0.5^{2+1}\left(1+0.5^2\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2\times 2-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2+1}\right)}\right)^{18}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.6541938959405405859389413304235391683304638768664157213 88...

1.6541938959405405859… is very near to the 14th root of the following Ramanujan's class invariant $Q = \left(G_{505}/G_{101/5}\right)^3 = 1164,2696$ i.e. 1,65578...

24*3+10^3*((((1 + (((-1)^2 0.5^(2+1)(1+0.5^2)(1-0.5)(1-0.5^3)(1-0.5^(2*2-1))/((1+0.5)(1+0.5^2)(1+0.5^(2+1)))))))^18

Input:

$$24\times 3+10^3\left(1+(-1)^2\times 0.5^{2+1}\left(1+0.5^2\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2\times 2-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2+1}\right)}\right)^{18}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1726.1938959405405859389413304235391683304638768664157213 88...

Open code

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

(((((24*3+10^3*((((1 + (((-1)^2 0.5^(2+1)(1+0.5^2)(1-0.5)(1-0.5^3)(1-0.5^(2*2-1))/((1+0.5)(1+0.5^2)(1+0.5^(2+1)))))))^18)))))))^1/3

Input:

$$\left(24\times 3+10^3\left(1+(-1)^2\times 0.5^{2+1}\left(1+0.5^2\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2\times 2-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2+1}\right)}\right)^{18}\right)\hat{}\,(1/3)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

11.9958...

This result is very near to the value of black hole entropy 12,1904

2*(((((24*3+10^3*((((1 + (((-1)^2 0.5^(2+1)(1+0.5^2)(1-0.5)(1-0.5^3)(1-0.5^(2*2-1))/((1+0.5)(1+0.5^2)(1+0.5^(2+1)))))))^18)))))))^1/3

Input:

$$2\left(24\times 3+10^3\left(1+(-1)^2\times 0.5^{2+1}\left(1+0.5^2\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2\times 2-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2+1}\right)}\right)^{18}\right)\hat{}\ (1/3)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

23.9916...

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

(((((24*3+10^3*((((1 + (((-1)^2 0.5^(2+1)(1+0.5^2)(1-0.5)(1-0.5^3)(1-0.5^(2*2-1))/((1+0.5)(1+0.5^2)(1+0.5^(2+1)))))))^18)))))))^1/15

Input:

$$\left(24\times 3+10^3\left(1+(-1)^2\times 0.5^{2+1}\left(1+0.5^2\right)(1-0.5)\left(1-0.5^3\right)\times\frac{1-0.5^{2\times 2-1}}{(1+0.5)\left(1+0.5^2\right)\left(1+0.5^{2+1}\right)}\right)^{18}\right)\hat{}\ (1/15)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.643637...

$1.643637\ldots \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Now, we have:

$$\gamma(q) = \sum_{n\geq 0} \frac{q^{n^2}(q;q)_n}{(q^3;q^3)_n}$$

That is:

Sum_{n >= 0} q^n^2/((1+q+q^2)(1+q^2+q^4)...(1+q^n+q^(2n))) sum q^n^2/((1+q+q^2)(1+q^2+q^4)(1+q^n+q^(2n))), n = 0 to 5

Result:

$$\sum_{n=0}^{5} \frac{q^{n^2}}{(1+q+q^2)(1+q^2+q^4)(1+q^n+q^{2n})} = \frac{q^4}{(q^2+q+1)(q^4+q^2+1)^2} + \frac{q}{(q^2+q+1)^2(q^4+q^2+1)} + \frac{1}{3(q^2+q+1)(q^4+q^2+1)} + \frac{q^{16}}{(q^2+q+1)(q^4+q^2+1)(q^8+q^4+1)} + \frac{q^{25}}{(q^2+q+1)(q^4+q^2+1)(q^{10}+q^5+1)} + \frac{q^9}{(q^2+q+1)(q^4+q^2+1)(q^6+q^3+1)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

$$\sum_{n=0}^{5} \frac{q^{n^2}}{(1+q+q^2)(1+q^2+q^4)(1+q^n+q^{2n})} = \left(3(q^2+q+1)q^4 + 3(q^4+q^2+1)q + (q^2+q+1)(q^4+q^2+1) + \frac{3(q^2+q+1)q^{16}}{q^4-q^2+1} + \frac{3(q^2+q+1)(q^4+q^2+1)q^{25}}{q^{10}+q^5+1} + \frac{3(q^2+q+1)(q^4+q^2+1)q^9}{q^6+q^3+1}\right) \Big/ \left(3(q^2+q+1)^2(q^4+q^2+1)^2\right)$$

Open code

For q = 0.5, we obtain:

sum 0.5^n^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^(2n))), n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{0.5^{n^2}}{(1+0.5^2+0.5^4)(0.5+1+0.5^2)(0.5^n+0.5^{2n}+1)} = \frac{21969655349}{75496791552}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

0.29100117895563732260472101287316968073530881907430385843 7...

Open code

2*((((((sum 0.5^n^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^(2n))), n = 0 to 5))))))^1/6

Input interpretation:

$$2\sqrt[6]{\sum_{n=0}^{5}\frac{0.5^{n^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^{2n})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.62809

This result is a golden number

27*4 + 10^3*2*((((((sum 0.5^n^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^(2n))), n = 0 to 5))))))^1/6

Input interpretation:

$$27\times 4+10^3\times 2\sqrt[6]{\sum_{n=0}^{5}\frac{0.5^{n^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^{2n})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1736.09

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

((((27*4 + 10^3*2*((((((sum 0.5^n^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^(2n))), n = 0 to 5))))))^1/6)))))^1/3

Input interpretation:

$$\sqrt[3]{27\times 4+10^3\times 2\sqrt[6]{\sum_{n=0}^{5}\frac{0.5^{n^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^{2n})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0187

This result is very near to the value of black hole entropy 12,1904

2((((27*4 + 10^3*2*((((((sum 0.5^n^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^(2n))), n = 0 to 5))))))^1/6)))))^1/3

Input interpretation:

$$2\sqrt[3]{27\times 4+10^3\times 2\sqrt[6]{\sum_{n=0}^{5}\frac{0.5^{n^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^{2n})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0374

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((27*4 + 10^3*2*((((((sum 0.5^n^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^(2n))), n = 0 to 5))))))^1/6)))))^1/15

Input interpretation:

$$\sqrt[15]{27\times 4+10^3\times 2\sqrt[6]{\sum_{n=0}^{5}\frac{0.5^{n^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^{2n})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64426

$$1.64426 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

sqrt[6((((27*4 + 10^3*2*((((((sum 0.5^n^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^(2n))), n = 0 to 5))))))^1/6)))))^1/15)]

Input interpretation:

$$\sqrt{6\sqrt[15]{27\times 4+10^3\times 2\sqrt[6]{\sum_{n=0}^{5}\frac{0.5^{n^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^n+0.5^{2n})}}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

3.14095

3.14095

From the above expression, for q = 0.5 and n = 2, we obtain:

Input:

$$\frac{0.5^{2^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^{2\times 2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  0.020732102364755425979915775834143181081956592160673793326...
  Open code

(54+24) * 0.5^2^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^(2*2))

Input:

$$(54+24)\times\frac{0.5^{2^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^{2\times 2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  1.617103984450923226433430515063168124392614188532555879494...
  Open code

Or:

Input:

$$(55+21+2)\times\frac{0.5^{2^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^{2\times 2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  1.617103984450923226433430515063168124392614188532555879494...

This result is a very good approximation to the value of the golden ratio 1,618033988749...

27*4 + 10^3*(55+21+2) *
0.5^2^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^(2*2))

Input:

$$27\times 4+10^3\,(55+21+2)\times\frac{0.5^{2^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^{2\times 2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  1725.103984450923226433430515063168124392614188532555879494...
  Open code

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

(((((27*4 + 10^3*(55+21+2) * 0.5^2^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^(2*2)))))))^1/3

Input:

$$\sqrt[3]{27\times 4+10^3\,(55+21+2)\times \frac{0.5^{2^2}}{\left(1+0.5+0.5^2\right)\left(1+0.5^2+0.5^4\right)\left(1+0.5^2+0.5^{2\times 2}\right)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

11.9933...

This result is very near to the value of black hole entropy 12,1904

2(((((27*4 + 10^3*(55+21+2) * 0.5^2^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^(2*2)))))))^1/3

Input:

$$2\sqrt[3]{27\times 4+10^3\,(55+21+2)\times \frac{0.5^{2^2}}{\left(1+0.5+0.5^2\right)\left(1+0.5^2+0.5^4\right)\left(1+0.5^2+0.5^{2\times 2}\right)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

23.9866...

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

(((((27*4 + 10^3*(55+21+2) * 0.5^2^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^(2*2)))))))^1/15

Input:

$$\sqrt[15]{27\times 4+10^3\,(55+21+2)\times \frac{0.5^{2^2}}{\left(1+0.5+0.5^2\right)\left(1+0.5^2+0.5^4\right)\left(1+0.5^2+0.5^{2\times 2}\right)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1.643568030985126263487230283183810464038877569960072506370...

$1.64356803098512626... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{6+\cfrac{1}{1+\cfrac{1}{25+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{2+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{3+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{12+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{\dots}}}}}}}}}}}}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$-\csc\left(\cot\left(\frac{96921172}{32323975}\right)\right) \approx 1.64356803098512626 50630$$

$$\frac{4294734226\,\pi}{8209155471} \approx 1.64356803098512626348 19812$$

$$\frac{44472 + 2376\,\pi + 21733\,\pi^2}{51600\,\pi} \approx 1.6435680309851262634 91012$$

sqrt(((((((6(((((27*4 + 10^3*(55+21+2) * 0.5^2^2/((1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^(2*2)))))))^1/15)))))))

Input:

$$\sqrt{6\sqrt[15]{27\times 4+10^3\,(55+21+2)\times\frac{0.5^{2^2}}{(1+0.5+0.5^2)(1+0.5^2+0.5^4)(1+0.5^2+0.5^{2\times 2})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

3.140288...

3.140288

We now, analyze the following **mock theta function μ of order 2** that was found by Srinivasa Ramanujan in his lost notebook.

$$\mu(q) = \sum_{n\geq 0} \frac{(-1)^n q^{n^2} (q;q^2)_n}{(-q^2;q^2)_n^2}$$

That is:

```
(-1)^n q^n^2 (1-q)(1-q^3)...(1-q^(2n-1))/((1+q^2)^2 (1+q^4)^2 ... (1+q^(2n))^2)
```

sum (-1)^n q^n^2 (1-q)(1-q^3)(1-q^(2n-1))/((1+q^2)^2 (1+q^4)^2 (1+q^(2n))^2) , n = 0 to 5

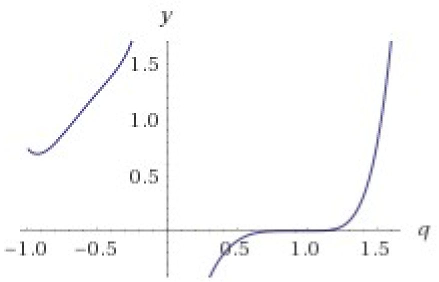
Sum:

$$\sum_{n=0}^{5} \frac{(-1)^n q^{n^2} ((1-q)(1-q^3)(1-q^{2n-1}))}{(q^2+1)^2 (q^4+1)^2 (q^{2n}+1)^2} = \frac{(1-q)(1-q^3)^2 q^4}{(q^2+1)^2 (q^4+1)^4} - \frac{(1-q)^2 (1-q^3) q}{(q^2+1)^4 (q^4+1)^2} + \frac{\left(1-\frac{1}{q}\right)(1-q)(1-q^3)}{4 (q^2+1)^2 (q^4+1)^2} - \frac{(1-q)(1-q^3)(1-q^9) q^{25}}{(q^2+1)^2 (q^4+1)^2 (q^{10}+1)^2} + \frac{(1-q)(1-q^3)(1-q^7) q^{16}}{(q^2+1)^2 (q^4+1)^2 (q^8+1)^2} - \frac{(1-q)(1-q^3)(1-q^5) q^9}{(q^2+1)^2 (q^4+1)^2 (q^6+1)^2}$$

Open code

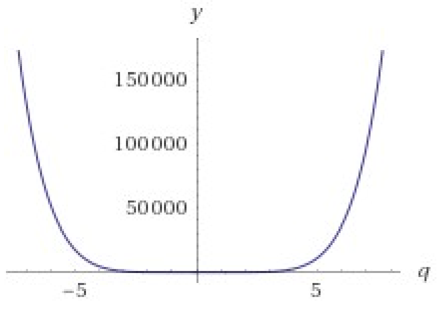
Enlarge Data Customize A Plaintext Interactive

Plots:



(q from −1 to 1.6)

Open code



(q from −7.5 to 8.2)

Alternate forms:

$$\frac{1}{4(q^2+1)^4(q^4+1)^4}(1-q)(1-q^3)\left(4(q-1)(q^4+1)^2 q + \frac{(q-1)(q^2+1)^2(q^4+1)^2}{q} - 4(q^2+1)^2(q^3-1)q^4 + \frac{4(q^4+1)^2(q^5-1)q^9}{(q^4-q^2+1)^2} - \frac{4(q^2+1)^2(q^4+1)^2(1-q^9)q^{25}}{(q^{10}+1)^2} - \frac{4(q^2+1)^2(q^4+1)^2(q^7-1)q^{16}}{(q^8+1)^2}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\left((q-1)^3(q^2+q+1)^2\left(4q^{64}-8q^{62}+4q^{61}+20q^{60}-8q^{59}-20q^{58}+16q^{57}+32q^{56}-16q^{55}-24q^{54}+20q^{53}+48q^{52}-20q^{51}-39q^{50}+35q^{49}+66q^{48}-61q^{47}-40q^{46}+109q^{45}+65q^{44}-186q^{43}-53q^{42}+279q^{41}+126q^{40}-429q^{39}-166q^{38}+607q^{37}+259q^{36}-866q^{35}-271q^{34}+1101q^{33}+284q^{32}-1365q^{31}-191q^{30}+1536q^{29}+109q^{28}-1665q^{27}+31q^{26}+1638q^{25}-113q^{24}-1561q^{23}+209q^{22}+1380q^{21}-235q^{20}-1181q^{19}+272q^{18}+921q^{17}-255q^{16}-682q^{15}+243q^{14}+447q^{13}-190q^{12}-265q^{11}+142q^{10}+123q^9-81q^8-46q^7+41q^6+9q^5-12q^4-q^3+2q^2-q+1\right)\right)/\left(4q(q^2+1)^4(q^4+1)^4(q^4-q^2+1)^2(q^8+1)^2(q^8-q^6+q^4-q^2+1)^2\right)$$

Open code

$$q^6-q^5-2q^4+q^3+2q^2+\frac{2911q+43811}{10800(q^2+1)}+\frac{-667q-5755}{5400(q^2+1)^2}+\frac{157-15q}{900(q^2+1)^3}-\frac{259(q+1)}{450(q^2+1)^4}+\frac{q^2+q-1}{9(q^4-q^2+1)^2}-\frac{3(11q^3-5q^2-9q-1)}{16(q^4+1)}+\frac{-q^3-2q^2-11q-3}{27(q^4-q^2+1)}+\frac{11q^3-5q^2-13q+3}{8(q^4+1)^2}+\frac{q^3+5q^2+q-3}{4(q^4+1)^3}+\frac{-q^3-q^2+q+1}{2(q^4+1)^4}+\frac{4q^6+3q^5-4q^4-5q^3+5q+3}{4(q^8+1)}+\frac{2q^7-48q^6-67q^5+51q^4+110q^3+4q^2-58q-42}{25(q^8-q^6+q^4-q^2+1)}+\frac{-q^7-3q^6-q^5+3q^4+3q^3-q^2-3q-1}{4(q^8+1)^2}+\frac{-5q^7+8q^5+5q^4-5q^3-8q^2+5}{5(q^8-q^6+q^4-q^2+1)^2}+q-\frac{1}{4q}-2$$

For q = 0.5, we obtain:

sum (-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2n))^2) , n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{(-1)^n\, 0.5^{n^2}\,((1-0.5)(1-0.5^3)(1-0.5^{2n-1}))}{(1+0.5^2)^2\,(1+0.5^4)^2\,(0.5^{2n}+1)^2} = -\frac{141245053289140078593}{1567170868825081000000}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

$-0.090127411183333497267666166661347568863109243640468795\,48\ldots$

Open code

((((-(-1+ sum (-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2n))^2) , n = 0 to 5)))))^6

Input interpretation:

$$\left(-\left(-1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2n})^2}\right)\right)\right)^6$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.67828

-64/10^3+(((((-1+sum (-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2n))^2) , n = 0 to 5)))))^6

Input interpretation:

$$-\frac{64}{10^3}+\left(-1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2n})^2}\right)\right)^6$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.61428

This result is a golden number

24*2+10^3*(((((-1+sum (-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2n))^2) , n = 0 to 5)))))^6

Input interpretation:

$$24\times 2+10^3\left(-1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2n})^2}\right)\right)^6$$

Enlarge Data Customize A Plaintext Interactive

Result:

1726.28

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

((((((((24*2+10^3*(((((-1+sum (-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2n))^2) , n = 0 to 5)))))^6))))))))^1/3

Input interpretation:

$$\left(24\times 2+10^3\left(-1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5^2)^2(1+0.5^4)^2(1+0.5^{2n})^2}\right)\right)^6\right)\hat{}\,(1/3)$$

Enlarge Data Customize A Plaintext Interactive

Result:

11.996

This result is very near to the value of black hole entropy 12,1904

2((((((((24*2+10^3*(((((-1+sum (-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2n))^2) , n = 0 to 5)))))^6))))))))^1/3

Input interpretation:

$$2\left(24\times 2+10^3\left(-1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5^2)^2(1+0.5^4)^2(1+0.5^{2n})^2}\right)\right)^6\right)\hat{}\,(1/3)$$

Enlarge Data Customize A Plaintext Interactive

Result:

23.992

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((24*2+10^3*(((((-1+sum (-1)^n 0.5^n^2 (1-0.5)(1-0.5^3)(1-0.5^(2n-1))/((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2n))^2) , n = 0 to 5)))))^6))))))))^1/15

Input interpretation:

$$\left(24\times 2+10^3\left(-1+\sum_{n=0}^{5}(-1)^n\times 0.5^{n^2}\left((1-0.5)(1-0.5^3)\times\frac{1-0.5^{2n-1}}{(1+0.5^2)^2(1+0.5^4)^2(1+0.5^{2n})^2}\right)\right)^6\right)\hat{}\,(1/15)$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64364

$1.64364 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

For q =0.5 and n =2, we have the following develop of the above function:

((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))

Input:

$$\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{\left(1+0.5^2\right)^2 \left(1+0.5^4\right)^2 \left(1+0.5^{2\times 2}\right)^2}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.012015181810562612995534057302953748159145604099567773374...

Open code

0.012015181810562612995534057302953748159145604099567773374

((((((10^5((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))))))^1/14

Input:

$$\sqrt[14]{10^5 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{\left(1+0.5^2\right)^2 \left(1+0.5^4\right)^2 \left(1+0.5^{2\times 2}\right)^2}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

1.659513306462121259314750377488713863612510498425599719157...

1.659513... is very near to the 14th root of the following Ramanujan's class invariant

$Q = \left(G_{505}/G_{101/5}\right)^3$ = 1164,2696 i.e. 1,65578...

10^3((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2

Input:

$$10^3 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{\left(1+0.5^2\right)^2 \left(1+0.5^4\right)^2 \left(1+0.5^{2\times 2}\right)^2}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

12.015181810562612995534057302953748159145604099567773374 36...

Open code

This result is very near to the value of black hole entropy 12,1904

(((((10^3((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2)))))^3

Input:

$$\left(10^3 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{\left(1+0.5^2\right)^2 \left(1+0.5^4\right)^2 \left(1+0.5^{2\times 2}\right)^2}\right)^3$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

  1734.566843207654958658514074263974836550968921529874304506...

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

2*((((((((((10^3((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2)))))^3))))))^1/3

Input:

$$2 \sqrt[3]{\left(10^3 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{\left(1+0.5^2\right)^2 \left(1+0.5^4\right)^2 \left(1+0.5^{2\times 2}\right)^2}\right)^3}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

  24.03036362112522599106811460590749631829120819913554674872...

Open code

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((((10^3((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2)))))^3))))))^1/15

Input:

$$\sqrt[15]{\left(10^3 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{\left(1+0.5^2\right)^2 \left(1+0.5^4\right)^2 \left(1+0.5^{2\times 2}\right)^2}\right)^3}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.64417...

$$1.64417... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

sqrt[(((6*((((((((((((10^3((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2)))))^3))))))^1/15)))]

Input:

$$\sqrt{6 \sqrt[15]{\left(10^3 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{\left(1+0.5^2\right)^2 \left(1+0.5^4\right)^2 \left(1+0.5^{2\times 2}\right)^2}\right)^3}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- Fewer digits
- More digits

3.1408605871750792395714336109112081483124827811280667292 36...

3.14086058717507923957143361091120814831248278112806 67

Multiplying by 0.0864055^2 and adding 1 to the result, we obtain:

1+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))))

Input interpretation:

$$1 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)\left(1-0.5^3\right)\left(1-0.5^{2\times 2-1}\right)\right)}{\left(1+0.5^2\right)^2 \left(1+0.5^4\right)^2 \left(1+0.5^{2\times 2}\right)^2}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.6213730718320613938934948979591836734693877551020408163 26...

Open code

This result is a golden number

10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))))))))))

Input interpretation:

$$10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

3621.373071832061393893494897959183673469387755102040816326...

This result is equal to the rest mass of double charmed Xi baryon 3621.40±0.78

1/3 * 10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))))))))))

Input interpretation:

$$\frac{1}{3} \times 10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1207.124357277353797964498299319727891156462585034013605442...

Open code

This result is very near to the rest mass of Sigma baryon 1197.449±0.030

8/21 * 10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))))))))))

Input interpretation:

$$\frac{8}{21} \times 10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1379.570694031261483387998056365403304178814382896015549076...

Open code

This result is very near to the rest mass of Sigma baryon 1382.8±0.4

1.616255^2 * 10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))))))))))

Where 1.616255 is the Planck length without exponent

Input interpretation:

$$1.616255^2 \times 10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

9460.041262984932827049714012924505739795918367346938775510...

Open code

This result is practically equal to the rest mass of Upsilon meson 9460.30±0.26

1/8 * 1.616255^2 * 10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))))))))))

Input interpretation:

$$\frac{1}{8} \times 1.616255^2 \times 10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1182.505157873116603381214251615563217474489795918367346938...

Open code

1/8 * 1.618034^2 * 10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))))))))))

Input interpretation:

$$\frac{1}{8} \times 1.618034^2 \times 10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

- Result:
  More digits
  1185.109739980005001788487305808553890306122448979591836734...
  Open code

These results 1182.505 and 1185.109 are very near to the rest mass of Sigma baryon 1189.37±0.07

10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2)))))))))))))

Input interpretation:

$$10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

- Result:
  More digits
  3621.373071832061393893494897959183673469387755102040816326...
  Open code

3621.373071832061393893494897959183673469387755102040816326

1/(24Pi) * 1.618034^2 * 3621.373071832061393893494897959183673469387755102040816326

Input interpretation:

$$\frac{1}{24\pi} \times 1.618034^2 \times 3621.373071832061393893494897959183673469387755102040816326$$

Open code

Enlarge Data Customize A Plaintext Interactive

- Result:
  More digits
  125.7440...

This result is in the range of the Higgs boson mass 125,18

- Series representations:
  More

$$\frac{1}{24\pi} 1.61803^2 \times 3621.3730718320613938934948979591836734693877551020408163260000 = \frac{98.7591}{\sum_{k=0}^{\infty} \frac{(-1)^k}{1+2k}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{24\pi} 1.61803^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{197.518}{-1 + \sum_{k=1}^{\infty} \frac{2^k}{\binom{2k}{k}}}$$

Open code

$$\frac{1}{24\pi} 1.61803^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{395.037}{\sum_{k=0}^{\infty} \frac{2^{-k}(-6+50k)}{\binom{3k}{k}}}$$

Open code

Integral representations:

- More

$$\frac{1}{24\pi} 1.61803^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{197.518}{\int_0^{\infty} \frac{1}{1+t^2} \, dt}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{24\pi} 1.61803^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{98.7591}{\int_0^{1} \sqrt{1-t^2} \, dt}$$

Open code

$$\frac{1}{24\pi} 1.61803^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{197.518}{\int_0^{\infty} \frac{\sin(t)}{t} \, dt}$$

Open code

10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2)))))))))))

Input interpretation:

$$10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

3621.373071832061393893494897959183673469387755102040816326...

3621.373071832061393893494897959183673469387755102040816326

1/(22Pi) * 1.618034^2 * 3621.373071832061393893494897959183673469387755102040816326

Input interpretation:

$$\frac{1}{22\pi} \times 1.618034^2 \times 3621.373071832061393893494897959183673469387755102040816326$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

137.1753...

137.1753…

This result is practically equal to the inverse of fine-structure constant 137,035... and very near to the masses of two Pions $\pi^{\pm}$: 139.57018(35) MeV/c^2 π^0: 134.9766(6) MeV/c^2 (note that the mean of masses is 137,27339, very near to the above result)

Series representations:

- More

$$\frac{1}{22\pi} 1.61803^2 \times 3621.3730718320613938934948979591836734693877551020408163260000 = \frac{107.737}{\sum_{k=0}^{\infty} \frac{(-1)^k}{1+2k}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{22\pi} 1.61803^2 \times 3621.373071832061393893494897959183673469387755102040816326000 = \frac{215.474}{-1+\sum_{k=1}^{\infty} \frac{2^k}{\binom{2k}{k}}}$$

Open code

$$\frac{1}{22\pi} 1.61803^2 \times 3621.373071832061393893494897959183673469387755102040816326000 = \frac{430.949}{\sum_{k=0}^{\infty} \frac{2^{-k}(-6+50k)}{\binom{3k}{k}}}$$

Open code

Integral representations:

- More

$$\frac{1}{22\pi} 1.61803^2 \times 3621.373071832061393893494897959183673469387755102040816326000 = \frac{215.474}{\int_0^{\infty} \frac{1}{1+t^2} \, dt}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{22\pi} 1.61803^2 \times 3621.373071832061393893494897959183673469387755102040816326000 = \frac{107.737}{\int_0^1 \sqrt{1-t^2} \, dt}$$

Open code

$$\frac{1}{22\pi} 1.61803^2 \times 3621.373071832061393893494897959183673469387755102040816326000 = \frac{215.474}{\int_0^{\infty} \frac{\sin(t)}{t} \, dt}$$

Open code

10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2)))))))))))))

Input interpretation:

$$10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

3621.37307183206139389349489795918367346938775510204081632 6...

Open code

3621.373071832061393893494897959183673469387755102040816326

1/(33Pi) * 1.618034^2 * 3621.373071832061393893494897959183673469387755102040816326

Input interpretation:

$$\frac{1}{33\pi} \times 1.618034^2 \times 3621.373071832061393893494897959183673469387755102040816326$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

91.45022...

This result is very near to the value of Z boson mass 91.1876±0.0021 GeV/c^2

Series representations:

- More

$$\frac{1}{33\pi} 1.61803^2 \times 3621.3730718320613938934948979591836734693877551020408163260000 = \frac{71.8248}{\sum_{k=0}^{\infty} \frac{(-1)^k}{1+2k}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{33\pi} 1.61803^2 \times 3621.3730718320613938934948979591836734693877551020408163260000 = \frac{143.65}{-1 + \sum_{k=1}^{\infty} \frac{2^k}{\binom{2k}{k}}}$$

Open code

$$\frac{1}{33\pi} 1.61803^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{287.299}{\sum_{k=0}^{\infty} \frac{2^{-k}(-6+50k)}{\binom{3k}{k}}}$$

Open code

Integral representations:

- More

$$\frac{1}{33\pi} 1.61803^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{143.65}{\int_0^{\infty} \frac{1}{1+t^2}\, dt}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{33\pi} 1.61803^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{71.8248}{\int_0^1 \sqrt{1-t^2}\, dt}$$

Open code

$$\frac{1}{33\pi} 1.61803^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{143.65}{\int_0^{\infty} \frac{\sin(t)}{t}\, dt}$$

Open code

10^3* ((((((3+0.0864055^2/((((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2)

Input interpretation:

$$10^3 \left(3 + \frac{0.0864055^2}{\frac{(-1)^2 \times 0.5^{2^2} ((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1}))}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}\right)$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

3621.373071832061393893494897959183673469387755102040816326...
Open code
3621.373071832061393893494897959183673469387755102040816326

1/(39Pi) * 1.6449^2 * 3621.373071832061393893494897959183673469387755102040816326

Input interpretation:

$$\frac{1}{39\pi} \times 1.6449^2 \times 3621.373071832061393893494897959183673469387755102040816326$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

79.9720...

This result is very near to the value of W boson mass 80.379±0.012 GeV/c^2

Series representations:

- More

$$\frac{1}{39\pi} 1.6449^2 \times 3621.3730718320613938934948979591836734693877551020408163260000 = \frac{62.8098}{\sum_{k=0}^{\infty} \frac{(-1)^k}{1+2k}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{39\pi} 1.6449^2 \times 3621.3730718320613938934948979591836734693877551020408163260000 = \frac{125.62}{-1 + \sum_{k=1}^{\infty} \frac{2^k}{\binom{2k}{k}}}$$

Open code

$$\frac{1}{39\pi} 1.6449^2 \times 3621.3730718320613938934948979591836734693877551020408163260000 = \frac{251.239}{\sum_{k=0}^{\infty} \frac{2^{-k}(-6+50k)}{\binom{3k}{k}}}$$

Open code

Integral representations:

- More

$$\frac{1}{39\pi} 1.6449^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{125.62}{\int_0^\infty \frac{1}{1+t^2}\, dt}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{39\pi} 1.6449^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{62.8098}{\int_0^1 \sqrt{1-t^2}\, dt}$$

Open code

$$\frac{1}{39\pi} 1.6449^2 \times 3621.37307183206139389349489795918367346938775510204081632600000 = \frac{125.62}{\int_0^\infty \frac{\sin(t)}{t}\, dt}$$

We note that:

1/ [16Pi*((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))]

Input:

$$\frac{1}{16\pi \times \frac{(-1)^2 \times 0.5^{2^2} ((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1}))}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.65577...

1.65577... is practically equal to the 14th root of the following Ramanujan's class invariant $Q = (G_{505}/G_{101/5})^3$ = 1164,2696 i.e. 1,65578...

Series representations:

- More

$$\frac{1}{(16\pi)\left(\frac{(-1)^2\, 0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}\right)} = \frac{1.30044}{\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{(16\pi)\left(\frac{(-1)^2\, 0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}\right)} = \frac{2.60088}{-1+\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}}$$

Open code

$$\frac{1}{(16\pi)\left(\frac{(-1)^2\, 0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}\right)} = \frac{5.20175}{\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}}$$

Open code

Integral representations:

- More

$$\frac{1}{(16\pi)\left(\frac{(-1)^2\, 0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}\right)} = \frac{2.60088}{\int_0^{\infty}\frac{1}{1+t^2}\,dt}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{1}{(16\pi)\left(\frac{(-1)^2\, 0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}\right)} = \frac{1.30044}{\int_0^{1}\sqrt{1-t^2}\,dt}$$

Open code

$$\frac{1}{(16\pi)\left(\frac{(-1)^2\, 0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}\right)} = \frac{2.60088}{\int_0^{\infty}\frac{\sin(t)}{t}\,dt}$$

16 + 10^3 * 1/ [16Pi*((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))]

Input:

$$16+10^3\times\frac{1}{16\pi\times\frac{(-1)^2\times 0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1671.77...

This result is very near to the rest mass of Omega baryon 1672.45±0.29

Series representations:

- More

$$16+\frac{10^3}{\frac{16\pi\left((-1)^2\,0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}}=16+\frac{1300.44}{\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$16+\frac{10^3}{\frac{16\pi\left((-1)^2\,0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}}=16+\frac{2600.88}{-1+\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}}$$

Open code

$$16+\frac{10^3}{\frac{16\pi\left((-1)^2\,0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}}=16+\frac{5201.75}{\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}}$$

Integral representations:

- More

$$16+\frac{10^3}{\frac{16\pi\left((-1)^2\,0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}}=16+\frac{2600.88}{\int_0^{\infty}\frac{1}{1+t^2}\,dt}$$

Open code

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$$16+\frac{10^3}{\frac{16\pi\left((-1)^2\,0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}}=16+\frac{1300.44}{\int_0^{1}\sqrt{1-t^2}\,dt}$$

Open code

$$16+\frac{10^3}{\frac{16\pi\left((-1)^2\,0.5^{2^2}\left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)\right)}{(1+0.5^2)^2\,(1+0.5^4)^2\,(1+0.5^{2\times 2})^2}}=16+\frac{2600.88}{\int_0^{\infty}\frac{\sin(t)}{t}\,dt}$$

Open code

(1/1.65577) * 1/[16*((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))]

Input interpretation:

$$\frac{1}{1.65577} \times \frac{1}{16 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  3.141591121829778191859191722009107791639699539261158844278...

Open code

This result is a very good approximation to π

(2/1.65577) * 1/[16*((((-1)^2 0.5^2^2 (1-0.5)(1-0.5^3)(1-0.5^(2*2-1)))) / ((((1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^(2*2))^2))))]

Input interpretation:

$$\frac{2}{1.65577} \times \frac{1}{16 \times \frac{(-1)^2 \times 0.5^{2^2} \left((1-0.5)(1-0.5^3)(1-0.5^{2\times 2-1})\right)}{(1+0.5^2)^2 (1+0.5^4)^2 (1+0.5^{2\times 2})^2}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits
  6.283182243659556383718383444018215583279399078522317688557...

Open code

6.283182243659556383718383444018215583279399078522317688557

This result is a very good approximation to the circle length with radius equal to 1: 2π

Mock theta functions of order 7

From the following mock theta function of order 7:

$$F_1(q) = \sum_{n\geq 0} \frac{q^{n^2}}{(q^n;q)_n}$$

That is:

Sum_{n >= 1} q^n^2/((1-q^n)(1-q^(n+1))...(1-q^(2n-1))) sum q^n^2 / ((1-q^n)(1-q^(n+1))(1-q^(2n-1))), n = 1 to k

Input interpretation:

$$\sum_{n=1}^{k} \frac{q^{n^2}}{(1-q^n)(1-q^{n+1})(1-q^{2n-1})}$$

Enlarge Data Customize A Plaintext Interactive

Result:

$$\sum_{n=1}^{k} \frac{q^{n^2}}{(1-q^n)(1-q^{n+1})(1-q^{2n-1})}$$

Open code

Sum:

$$\sum_{n=1}^{k} \frac{q^{n^2}}{(1-q^n)(1-q^{n+1})(1-q^{2n-1})}$$

From which, for q = 0.93201, we obtain:

sum 0.93201^n^2/((1-0.93201^n)(1-0.93201^(n+1))(1-0.93201^(2n-1))), n = 1 to infinity

Input interpretation:

$$\sum_{n=1}^{\infty} \frac{0.93201^{n^2}}{(1-0.93201^n)(1-0.93201^{n+1})(1-0.93201^{2n-1})}$$

Enlarge Data Customize A Plaintext Interactive

Infinite sum:

$$\sum_{n=1}^{\infty} \frac{0.93201^{n^2}}{(1-0.93201^n)(1-0.93201^{n+1})(1-0.93201^{2n-1})} = 1748.11$$

1748

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

For n = 123, a(n) = 1748 (OEIS), value that correspond the above result.

((((((sum 0.93201^n^2/((1-0.93201^n)(1-0.93201^(n+1))(1-0.93201^(2n-1))), n = 1 to infinity))))))^1/3

Input interpretation:

$$\sqrt[3]{\sum_{n=1}^{\infty} \frac{0.93201^{n^2}}{(1-0.93201^n)(1-0.93201^{n+1})(1-0.93201^{2n-1})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0464

This result is very near to the value of black hole entropy 12,1904

2*((((((sum 0.93201^n^2/((1-0.93201^n)(1-0.93201^(n+1))(1-0.93201^(2n-1))), n = 1 to infinity))))))^1/3

Input interpretation:

$$2\sqrt[3]{\sum_{n=1}^{\infty} \frac{0.93201^{n^2}}{(1-0.93201^n)(1-0.93201^{n+1})(1-0.93201^{2n-1})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0927

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((sum 0.93201^n^2/((1-0.93201^n)(1-0.93201^(n+1))(1-0.93201^(2n-1))), n = 1 to infinity))))))^1/15

Input interpretation:

$$\sqrt[15]{\sum_{n=1}^{\infty} \frac{0.93201^{n^2}}{(1-0.93201^n)(1-0.93201^{n+1})(1-0.93201^{2n-1})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64502

$1.64502 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Continued fraction:

- Linear form

$$1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{4+\cfrac{1}{2+\cfrac{1}{6+\cfrac{1}{1+\cfrac{1}{10+\cfrac{1}{1+\cfrac{1}{1+\cfrac{1}{\dots}}}}}}}}}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Possible closed forms:

- More

$$\sigma_S - \frac{1}{60} \approx 1.6450212829$$

$$\sqrt{\frac{2}{\mathcal{D}_{\text{Do}}}} \approx 1.645007053$$

- σ_S is Somos's quadratic recurrence constant
  - $\mathcal{D}_{\text{Do}}$ is the Dottie number

We have also that:

sum q^n^2 / ((1-q^n)(1-q^(n+1))(1-q^(2n-1))), n = 1 to k

sum q^n^2/((1-q^n)(1-q^(n+1))(1-q^(2n-1))), n = 1 to 5

Result:

$$\sum_{n=1}^{5} \frac{q^{n^2}}{(1-q^n)(1-q^{n+1})(1-q^{2n-1})} = \frac{q}{(1-q)^2(1-q^2)} + \frac{q^4}{(1-q^2)(1-q^3)^2} + \frac{q^{25}}{(1-q^5)(1-q^6)(1-q^9)} + \frac{q^{16}}{(1-q^4)(1-q^5)(1-q^7)} + \frac{q^9}{(1-q^3)(1-q^4)(1-q^5)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

$$\sum_{n=1}^{5} \frac{q^{n^2}}{(1-q^n)(1-q^{n+1})(1-q^{2n-1})} = \frac{q^4}{(1-q^2)(q^3-1)^2} - \frac{q^{25}}{(q^5-1)(q^6-1)(q^9-1)} - \frac{q^{16}}{(q^4-1)(q^5-1)(q^7-1)} - \frac{q^9}{(q^3-1)(q^4-1)(q^5-1)} - \frac{q}{(q-1)^3(q+1)}$$

Open code

For q = 0.5, we obtain:

sum 0.5^n^2/((1-0.5^n)(1-0.5^(n+1))(1-0.5^(2n-1))), n = 1 to 5

Sum:

$$\sum_{n=1}^{5} \frac{0.5^{n^2}}{(1-0.5^n)(1-0.5^{n+1})(1-0.5^{2n-1})} = \frac{8047828109}{2897002080}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

2.777984926058458335659876364327636243878706500618045810999...

Open code

((((((sum 0.5^n^2/((1-0.5^n)(1-0.5^(n+1))(1-0.5^(2n-1))), n = 1 to 5))))))^1/2

Input interpretation:

$$\sqrt{\sum_{n=1}^{5} \frac{0.5^{n^2}}{(1-0.5^n)(1-0.5^{n+1})(1-0.5^{2n-1})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.66673

1.66673

This result is a golden number, very near to the proton mass

8^2 + 10^3((((((sum 0.5^n^2/((1-0.5^n)(1-0.5^(n+1))(1-0.5^(2n-1))), n = 1 to 5))))))^1/2

Input interpretation:

$$8^2 + 10^3 \sqrt{\sum_{n=1}^{5} \frac{0.5^{n^2}}{(1-0.5^n)(1-0.5^{n+1})(1-0.5^{2n-1})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1730.73

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

[(((8^2 + 10^3((((((sum 0.5^n^2/((1-0.5^n)(1-0.5^(n+1))(1-0.5^(2n-1))), n = 1 to 5))))))^1/2)))]^1/3

Input interpretation:

$$\sqrt[3]{8^2 + 10^3 \sqrt{\sum_{n=1}^{5} \frac{0.5^{n^2}}{(1-0.5^n)(1-0.5^{n+1})(1-0.5^{2n-1})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0063

This result is very near to the value of black hole entropy 12,1904

2*[(((8^2 + 10^3((((((sum 0.5^n^2/((1-0.5^n)(1-0.5^(n+1))(1-0.5^(2n-1))), n = 1 to 5))))))^1/2)))]^1/3

Input interpretation:

$$2\sqrt[3]{8^2 + 10^3 \sqrt{\sum_{n=1}^{5} \frac{0.5^{n^2}}{(1-0.5^n)(1-0.5^{n+1})(1-0.5^{2n-1})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0126

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

[(((8^2 + 10^3((((((sum 0.5^n^2/((1-0.5^n)(1-0.5^(n+1))(1-0.5^(2n-1))), n = 1 to 5))))))^1/2)))]^1/15

Input interpretation:

$$\sqrt[15]{8^2 + 10^3 \sqrt{\sum_{n=1}^{5} \frac{0.5^{n^2}}{(1-0.5^n)(1-0.5^{n+1})(1-0.5^{2n-1})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64392

$$1.64392 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$$

For q = 0.5 and n =2, we obtain:

((0.5^2^2/((1-0.5^2)(1-0.5^(2+1))(1-0.5^(2*2-1)))

Input:

$$\frac{0.5^{2^2}}{(1-0.5^2)(1-0.5^{2+1})(1-0.5^{2\times 2-1})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.108843537414965986394557823129251700680272108843537414965...

Open code

((27 * 0.0864055)) / ((13*((0.5^2^2/((1-0.5^2)(1-0.5^(2+1))(1-0.5^(2*2-1)))

Input interpretation:

$$\frac{27 \times 0.0864055}{13 \times \frac{0.5^{2^2}}{(1-0.5^2)(1-0.5^{2+1})(1-0.5^{2\times 2-1})}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.648766487980769230769230769230769230769230769230769230769...

Open code

$1.648766... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

24*4 + ((((((10^3((27 * 0.0864055)) / ((13*((0.5^2^2/((1-0.5^2)(1-0.5^(2+1))(1-0.5^(2*2-1))))))

Input interpretation:

$$24\times4+10^3\times\frac{27\times0.0864055}{13\times\frac{0.5^{2^2}}{(1-0.5^2)(1-0.5^{2+1})(1-0.5^{2\times2-1})}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1744.7664879807692307692307692307692307692307692307692307690769...

Open code

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

((((((((24*4+10^3((27 * 0.0864055)) / ((13*((0.5^2^2/((1-0.5^2)(1-0.5^(2+1))(1-0.5^(2*2-1))))))))))^1/3

Input interpretation:

$$\sqrt[3]{24\times4+10^3\times\frac{27\times0.0864055}{13\times\frac{0.5^{2^2}}{(1-0.5^2)(1-0.5^{2+1})(1-0.5^{2\times2-1})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

12.0387...

This result is very near to the value of black hole entropy 12,1904

2*((((((((24*4+10^3((27 * 0.0864055)) / ((13*((0.5^2^2/((1-0.5^2)(1-0.5^(2+1))(1-0.5^(2*2-1))))))))))^1/3

Input interpretation:

$$2\sqrt[3]{24\times4+10^3\times\frac{27\times0.0864055}{13\times\frac{0.5^{2^2}}{(1-0.5^2)(1-0.5^{2+1})(1-0.5^{2\times2-1})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive
Result:

- More digits

24.0774...

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((24*4+10^3((27 * 0.0864055)) / ((13*((0.5^2^2/((1-0.5^2)(1-0.5^(2+1))(1-0.5^(2*2-1))))))))))^1/15

Input interpretation:

$$\sqrt[15]{24\times 4+10^3\times \frac{27\times 0.0864055}{13\times \frac{0.5^{2^2}}{(1-0.5^2)(1-0.5^{2+1})(1-0.5^{2\times 2-1})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive
Result:

- More digits

1.64481...

$1.64481... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Now, we have that:

$$F_0(q) = \sum_{n\geq 0} \frac{q^{n^2}}{(q^{n+1};q)_n}$$

That is:

Sum_{n >= 0} q^n^2/((1-q^(n+1))(1-q^(n+2))...(1-q^(2n))).

sum q^n^2/((1-q^(n+1))(1-q^(n+2))(1-q^(2n))) , n = 1 to 5

Result:

$$\sum_{n=1}^{5} \frac{q^{n^2}}{(1-q^{n+1})(1-q^{n+2})(1-q^{2n})} = \frac{q^4}{(1-q^3)(1-q^4)^2} + \frac{q}{(1-q^2)^2(1-q^3)} + \frac{q^{25}}{(1-q^6)(1-q^7)(1-q^{10})} + \frac{q^{16}}{(1-q^5)(1-q^6)(1-q^8)} + \frac{q^9}{(1-q^4)(1-q^5)(1-q^6)}$$

Open code

Enlarge Data Customize A Plaintext Interactive
Result:

$$\sum_{n=1}^{5} \frac{q^{n^2}}{(1-q^{n+1})(1-q^{n+2})(1-q^{2n})} = \frac{q^4}{(1-q^3)(q^4-1)^2} + \frac{q}{(q^2-1)^2(1-q^3)} - \frac{q^{25}}{(q^6-1)(q^7-1)(q^{10}-1)} - \frac{q^{16}}{(q^5-1)(q^6-1)(q^8-1)} - \frac{q^9}{(q^4-1)(q^5-1)(q^6-1)}$$

Open code

For q = 0.5, we obtain:

sum 0.5^n^2/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n))), n = 1 to 5

Sum:

$$\sum_{n=1}^{5} \frac{0.5^{n^2}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n})} = \frac{5098953283}{4638179700}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

1.099343624612043384175046085428729723430077536668102790411...

Open code

(((((sum 0.5^n^2/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n))), n = 1 to 5)))))^5

Input interpretation:

$$\left(\sum_{n=1}^{5} \frac{0.5^{n^2}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n})}\right)^5$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.60571

This result is a golden number very near to the electric charge of positron

16*2^3 + 10^3(((((sum 0.5^n^2/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n))), n = 1 to 5)))))^5

Input interpretation:

$$16\times 2^3 + 10^3\left(\sum_{n=1}^{5} \frac{0.5^{n^2}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n})}\right)^5$$

Enlarge Data Customize A Plaintext Interactive

Result:

1733.71

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

((((((((16*2^3 + 10^3(((((sum 0.5^n^2/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n))), n = 1 to 5)))))^5))))))))^1/3

Input interpretation:

$$\sqrt[3]{16\times 2^3 + 10^3\left(\sum_{n=1}^{5}\frac{0.5^{n^2}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n})}\right)^5}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0132

This result is very near to the value of black hole entropy 12,1904

2*((((((((16*2^3 + 10^3(((((sum 0.5^n^2/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n))), n = 1 to 5)))))^5))))))))^1/3

Input interpretation:

$$2\sqrt[3]{16\times 2^3 + 10^3\left(\sum_{n=1}^{5}\frac{0.5^{n^2}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n})}\right)^5}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0264

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((16*2^3 + 10^3(((((sum 0.5^n^2/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n))), n = 1 to 5)))))^5))))))))^1/15

Input interpretation:

$$\sqrt[15]{16\times 2^3 + 10^3\left(\sum_{n=1}^{5}\frac{0.5^{n^2}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n})}\right)^5}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64411

$1.64411 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

For q = 0.5 and n = 2, we obtain:

0.5^2^2/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2))

Input:

$$\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

0.08126984126984126984126984126984126984126984126984126984...

Open code

(((((1+ 0.5^2^2/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2)))))))^(2Pi)

Input:

$$\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.63386...

This result is a golden number

Series representations:

- More

$$\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} = 1.08127^{8\sum_{k=0}^{\infty}(-1)^k/(1+2k)}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} = 0.731583\, e^{0.312545\times\sum_{k=1}^{\infty}2^k/\binom{2k}{k}}$$

Open code

$$\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} = 1.08127^{2\sum_{k=0}^{\infty}\left(2^{-k}(-6+50k)\right)/\binom{3k}{k}}$$

Open code

- $\binom{n}{m}$ is the binomial coefficient
-

Integral representations:

- More

$$\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} = e^{0.312545\int_0^{\infty}1/(1+t^2)\,dt}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} = e^{0.625089 \int_0^1 \sqrt{1-t^2}\, dt}$$

Open code

$$\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} = e^{0.312545 \int_0^\infty \sin(t)/t\, dt}$$

Open code

24*4 + 10^3(((((1+ 0.5^2^2/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2)))))))^(2Pi)

Input:

$$24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1729.86...

This result is very near to the mass of candidate glueball $f_0(1710)$ meson. Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic curve. As a consequence, it is sometimes called a Zagier as a pun on the Gross–Zagier theorem. The number 1728 is one less than the Hardy–Ramanujan number 1729

Series representations:

- More

$$24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} =$$
$$96+1000\times 1.08127^{8\sum_{k=0}^{\infty}(-1)^k/(1+2k)}$$

Open code

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$$24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} =$$
$$96+731.583\, e^{0.312545\times\sum_{k=1}^{\infty}2^k/\binom{2k}{k}}$$

Open code

$$24 \times 4 + 10^3 \left(1 + \frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} =$$

$$96 + 1000 \times 1.08127^{2 \sum_{k=0}^{\infty} \left(2^{-k}(-6+50k)\right)/\binom{3k}{k}}$$

Open code

- $\binom{n}{m}$ is the binomial coefficient

Integral representations:

More

$$24 \times 4 + 10^3 \left(1 + \frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} =$$

$$96 + 1000\, e^{0.312545 \int_0^{\infty} 1/(1+t^2)\, dt}$$

Open code

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$$24 \times 4 + 10^3 \left(1 + \frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} =$$

$$96 + 1000\, e^{0.625089 \int_0^1 \sqrt{1-t^2}\, dt}$$

Open code

$$24 \times 4 + 10^3 \left(1 + \frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi} = 96 + 1000\, e^{0.312545 \int_0^{\infty} \sin(t)/t\, dt}$$

Open code

((((((((24*4 + 10^3(((((1+ 0.5^2^2/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2))))))^(2Pi)))))))))^1/3

Input:

$$\sqrt[3]{24 \times 4 + 10^3 \left(1 + \frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

12.0043...

This result is very near to the value of black hole entropy 12,1904

2*((((((((24*4 + 10^3(((((1+ 0.5^2^2/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2))))))^(2Pi)))))))))^1/3

Input:

$$2\sqrt[3]{24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

24.0086...

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

Series representations:

- More

$$2\sqrt[3]{24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}} = 4\sqrt[3]{12+125\times 1.08127^{8\sum_{k=0}^{\infty}(-1)^k/(1+2k)}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$2\sqrt[3]{24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}} = 2\sqrt[3]{96+731.583\, e^{0.312545\times\sum_{k=1}^{\infty}2^k/\binom{2k}{k}}}$$

Open code

$$2\sqrt[3]{24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}} = 4\sqrt[3]{12+125\times 1.08127^{2\sum_{k=0}^{\infty}\left(2^{-k}(-6+50k)\right)/\binom{3k}{k}}}$$

Open code

- $\binom{n}{m}$ is the binomial coefficient

Integral representations:

- More

$$\frac{2\sqrt[3]{24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}}}{4\sqrt[3]{12+125\,e^{0.312545\int_0^\infty 1/(1+t^2)\,dt}}} =$$

Open code

Enlarge Data Customize A Plaintext Interactive

$$\frac{2\sqrt[3]{24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}}}{4\sqrt[3]{12+125\,e^{0.625089\int_0^1 \sqrt{1-t^2}\,dt}}} =$$

Open code

$$\frac{2\sqrt[3]{24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}}}{4\sqrt[3]{12+125\,e^{0.312545\int_0^\infty \sin(t)/t\,dt}}} =$$

Open code

((((((((24*4 + 10^3(((((1+ 0.5^2^2/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2))))))^(2Pi)))))))))^1/15

Input:

$$\sqrt[15]{24\times 4+10^3\left(1+\frac{0.5^{2^2}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times 2})}\right)^{2\pi}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

1.643870...

$1.643870\ldots \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Now, we have that:

$$F_2(q) = \sum_{n\geq 0} \frac{q^{n(n+1)}}{(q^{n+1};q)_{n+1}}$$

That is:

Sum_{n >= 0} q^(n(n+1))/((1-q^(n+1))(1-q^(n+2))...(1-q^(2n+1)))

sum q^(n(n+1))/((1-q^(n+1))(1-q^(n+2))(1-q^(2n+1))), n = 0 to 5

Result:

$$\sum_{n=0}^{5} \frac{q^{n(n+1)}}{(1-q^{n+1})(1-q^{n+2})(1-q^{2n+1})} = \frac{1}{(1-q)^2(1-q^2)} + \frac{q^2}{(1-q^2)(1-q^3)^2} + \frac{q^{30}}{(1-q^6)(1-q^7)(1-q^{11})} + \frac{q^{20}}{(1-q^5)(1-q^6)(1-q^9)} + \frac{q^{12}}{(1-q^4)(1-q^5)(1-q^7)} + \frac{q^6}{(1-q^3)(1-q^4)(1-q^5)}$$

Open code

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Result:

$$\sum_{n=0}^{5} \frac{q^{n(n+1)}}{(1-q^{n+1})(1-q^{n+2})(1-q^{2n+1})} = \frac{q^2}{(1-q^2)(q^3-1)^2} - \frac{q^{30}}{(q^6-1)(q^7-1)(q^{11}-1)} - \frac{q^{20}}{(q^5-1)(q^6-1)(q^9-1)} - \frac{q^{12}}{(q^4-1)(q^5-1)(q^7-1)} - \frac{q^6}{(q^3-1)(q^4-1)(q^5-1)} - \frac{1}{(q-1)^3(q+1)}$$

Open code

For q = 0.5, we obtain:

sum 0.5^(n(n+1))/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n+1))), n = 0 to 5

Sum:

$$\sum_{n=0}^{5} \frac{0.5^{n(n+1)}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n+1})} = \frac{13\,731\,035\,602\,583}{2\,372\,065\,303\,104}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Decimal approximation:

- More digits

5.788641478215231617620274222175362884979462245421215507942...

Open code

1.0864055 (((((sum 0.5^(n(n+1))/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n+1))), n = 0 to 5)))))

Input interpretation:

$$1.0864055 \sum_{n=0}^{5} \frac{0.5^{n(n+1)}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n+1})}$$

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Result:

6.28881

6.28881 ≈ 2π

1/2 * 1.0864055 (((((sum 0.5^(n(n+1))/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n+1))), n = 0 to 5)))))

Input interpretation:

$$\frac{1}{2} \times 1.0864055 \sum_{n=0}^{5} \frac{0.5^{n(n+1)}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n+1})}$$

Enlarge Data Customize A Plaintext Interactive

Result:

3.14441

1.0864055^3 (((((sum 0.5^(n(n+1))/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n+1))), n = 0 to 5)))))^1/7

Input interpretation:

$$1.0864055^3 \sqrt[7]{\sum_{n=0}^{5} \frac{0.5^{n(n+1)}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n+1})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64784

$1.64784 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

24*4 + 10^3 * 1.0864055^3 (((((sum 0.5^(n(n+1))/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n+1))), n = 0 to 5)))))^1/7

Input interpretation:

$$24 \times 4 + 10^3 \times 1.0864055^3 \sqrt[7]{\sum_{n=0}^{5} \frac{0.5^{n(n+1)}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n+1})}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1743.84

This result is very near to the mass of candidate glueball $f_0(1710)$ meson.

((((((((24*4 + 10^3 * 1.0864055^3 (((((sum 0.5^(n(n+1))/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n+1))), n = 0 to 5)))))^1/7))))))))^1/3

Input interpretation:

$$\sqrt[3]{24\times 4+10^3\times 1.0864055^3\sqrt[7]{\sum_{n=0}^{5}\frac{0.5^{n(n+1)}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n+1})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

12.0366

This result is very near to the value of black hole entropy 12,1904

2((((((((24*4 + 10^3 * 1.0864055^3 (((((sum 0.5^(n(n+1))/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n+1))), n = 0 to 5)))))^1/7))))))))^1/3

Input interpretation:

$$2\sqrt[3]{24\times 4+10^3\times 1.0864055^3\sqrt[7]{\sum_{n=0}^{5}\frac{0.5^{n(n+1)}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n+1})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

24.0731

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((24*4 + 10^3 * 1.0864055^3 (((((sum 0.5^(n(n+1))/((1-0.5^(n+1))(1-0.5^(n+2))(1-0.5^(2n+1))), n = 0 to 5)))))^1/7))))))))^1/15

Input interpretation:

$$\sqrt[15]{24\times 4+10^3\times 1.0864055^3\sqrt[7]{\sum_{n=0}^{5}\frac{0.5^{n(n+1)}}{(1-0.5^{n+1})(1-0.5^{n+2})(1-0.5^{2n+1})}}}$$

Enlarge Data Customize A Plaintext Interactive

Result:

1.64475

$1.64475 \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

For q = 0.5 and n =2, we obtain:

0.5^(2(2+1))/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2+1)))

Input:

$$\frac{0.5^{2(2+1)}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times2+1})}$$
Open code

Enlarge Data Customize A Plaintext Interactive
Result:

- More digits

0.019662058371735791090629800307219662058371735791090629800...
Open code

(8/250) 1 / (((((((0.5^(2(2+1))/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2+1))))))))

Input:
$$\frac{8}{250}\times\frac{1}{\frac{0.5^{2(2+1)}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times2+1})}}$$
Open code

Enlarge Data Customize A Plaintext Interactive
Result:
1.6275
This result is a golden number

27*4 + 10^3 (8/250) 1 / (((((((0.5^(2(2+1))/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2+1))))))))

Input:
$$27\times4+10^3\times\frac{8}{250}\times\frac{1}{\frac{0.5^{2(2+1)}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times2+1})}}$$
Open code

Enlarge Data Customize A Plaintext Interactive
Result:
1735.5
Open code
This result is very near to the mass of candidate glueball f_0(1710) meson.

((((((((((27*4 + 10^3 (8/250) 1 / (((((((0.5^(2(2+1))/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2+1))))))))))))))))))^1/3

Input:
$$\sqrt[3]{27\times4+10^3\times\frac{8}{250}\times\frac{1}{\frac{0.5^{2(2+1)}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times2+1})}}}$$
Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

12.0173...

This result is very near to the value of black hole entropy 12,1904

2*((((((((((27*4 + 10^3 (8/250) 1 / (((((((0.5^(2(2+1))/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2+1))))))))))))))))))^1/3

Input:

$$2\sqrt[3]{27\times4+10^3\times\frac{8}{250}\times\frac{1}{\frac{0.5^{2(2+1)}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times2+1})}}}$$

Open code

Enlarge Data Customize A Plaintext Interactive

Result:

- More digits

24.0347...

This value is linked to the "Ramanujan function" (an elliptic modular function that satisfies the need for "conformal symmetry") that has 24 "modes" corresponding to the physical vibrations of a bosonic string.

((((((((((27*4 + 10^3 (8/250) 1 / (((((((0.5^(2(2+1))/((1-0.5^(2+1))(1-0.5^(2+2))(1-0.5^(2*2+1))))))))))))))))))^1/15

Input:

$$\sqrt[15]{27\times4+10^3\times\frac{8}{250}\times\frac{1}{\frac{0.5^{2(2+1)}}{(1-0.5^{2+1})(1-0.5^{2+2})(1-0.5^{2\times2+1})}}}$$

Open code

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Result:

- More digits

1.64423...

$1.64423... \approx \zeta(2) = \frac{\pi^2}{6} = 1.6449$

Conclusion

Also in this work we obtain several interesting results, such as the particle type solutions and the values close to the mass of the "glueball" candlestick $f_0(1710)$. Furthermore, the mathematical connection between $\zeta(2) = \pi^2/6 = 1.6449...$, π and various Ramanujan's Mock Theta functions, appears even more evident here.

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