Further relationships between several Ramanujan's mathematics parameters, some equations concerning the $SO(2^{13})$ group in Bosonic String Theory, various parameters regarding Particle Physics, ϕ and $\zeta(2)$. XI

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Abstract

In this paper (part XI), we describe and analyze further new relationships between some Ramanujan's mathematics parameters, several equations concerning the $SO(2^{13})$ group, in Bosonic String Theory, various parameters regarding Particle Physics, ϕ and $\zeta(2)$.

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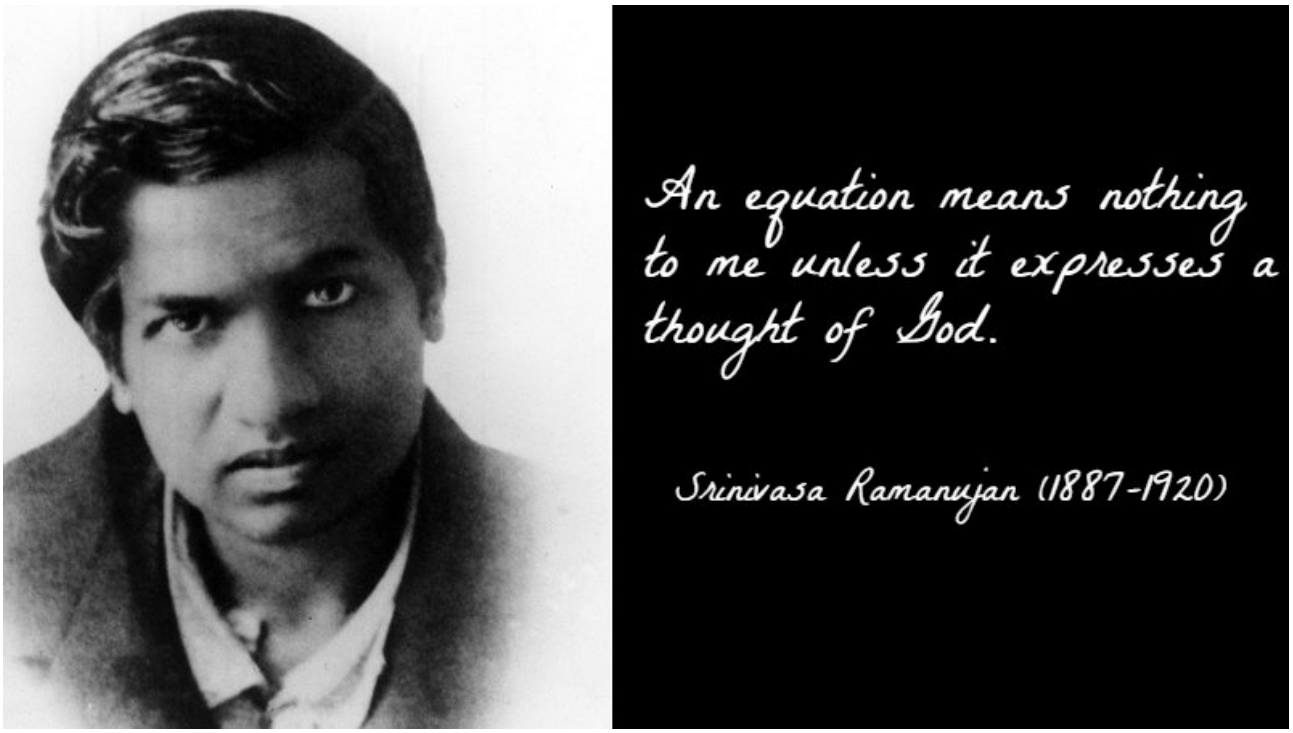


https://mobygeek.com/features/indian-mathematician-srinivasa-ramanujan-quotes-11012

From:

D-Branes, Tachyons, and String Field Theory - Lectures presented at TASI 2001, Boulder, Colorado **-** *Washington Taylor and Barton Zwiebach*
arXiv:hep-th/0311017v3 29 Mar 2004

we have that:

potential in the level $(2,6)$ truncation is given by

$$\begin{aligned} V &= -\frac{1}{2}\phi^2 + 26B^2 - \frac{1}{2}\beta^2 \\ &\quad +\bar{\kappa}g\left[\phi^3 - \frac{130}{9}\phi^2 B - \frac{11}{9}\phi^2\beta + \frac{30212}{243}\phi B^2 + \frac{2860}{243}\phi B\beta + \frac{19}{81}\phi\beta^2\right. \\ &\quad \left. -\frac{2178904}{6561}B^3 - \frac{332332}{6561}B^2\beta - \frac{2470}{2187}B\beta^2 - \frac{1}{81}\beta^3\right] \end{aligned} \tag{267}$$

As an example of how these terms arise, consider the $\phi^2 B$ term. The coefficient in this term is given by

$$g\,\langle V_3|\left(|0_1\rangle \otimes |0_1\rangle \otimes \alpha_{-1}\cdot\alpha_{-1}|0_1\rangle\right) = -g\bar{\kappa}\,(3\cdot 26)\,V_{11}^{11} = -g\bar{\kappa}\frac{130}{9}\,, \tag{268}$$

where we have used $V_{11}^{11} - 5/27$.

In the level (2, 6) truncation of the theory, the nontrivial vacuum is found by simultaneously solving the three quadratic equations found by setting to zero the derivatives of the potential (267) with respect to ϕ, B, and β. There are a number of different solutions to these equations, but only one is in the vicinity of $\phi = 1/3g\kappa$. The solution of interest is

$$\phi \approx 0.39766\,\frac{1}{g\bar{\kappa}}\,, \quad B \approx 0.02045\,\frac{1}{g\bar{\kappa}}\,, \quad \beta \approx -0.13897\,\frac{1}{g\bar{\kappa}}\,. \tag{269}$$

Plugging these values into the potential gives

$$E_{(2,6)} - -0.95938\,T_{25}\,, \tag{270}$$

From:

$$\begin{aligned} V &= -\frac{1}{2}\phi^2 + 26B^2 - \frac{1}{2}\beta^2 \\ &\quad +\bar{\kappa}g\left[\phi^3 - \frac{130}{9}\phi^2 B - \frac{11}{9}\phi^2\beta + \frac{30212}{243}\phi B^2 + \frac{2860}{243}\phi B\beta + \frac{19}{81}\phi\beta^2\right. \\ &\quad \left. -\frac{2178904}{6561}B^3 - \frac{332332}{6561}B^2\beta - \frac{2470}{2187}B\beta^2 - \frac{1}{81}\beta^3\right] \end{aligned}$$

$$\phi \approx 0.39766\,\frac{1}{g\bar{\kappa}}\,, \quad B \approx 0.02045\,\frac{1}{g\bar{\kappa}}\,, \quad \beta \approx -0.13897\,\frac{1}{g\bar{\kappa}}\,.$$

We obtain:

-1/2*0.39766^2+26*0.02045^2-1/2*0.13897^2

Input:

$$-\frac{0.39766^2}{2}+26\times 0.02045^2-\frac{1}{2}\times 0.13897^2$$

Result:

-0.07784980325

-0.07784980325

0.39766^3-(130/9)*0.39766^2*0.02045-(11/9)*0.39766^2*(-0.13897)+(30212/243)*0.39766*0.02045^2+(2860/243)*0.39766*0.02045*(-0.13897)

Input:

$$0.39766^3-\frac{130}{9}\times 0.39766^2\times 0.02045-\frac{11}{9}\times 0.39766^2\times(-0.13897)+\frac{30\,212}{243}\times 0.39766\times 0.02045^2+\frac{2860}{243}\times 0.39766\times 0.02045\times(-0.13897)$$

Result:

0.0504070032014721481481481481481481481481481481481481481481481481481481...

Repeating decimal:

$0.0504070032014721\overline{48}$ (period 3)

0.050407003201472148

(19/81)*0.39766*0.13897^2-(2178904/6561)0.02045^3-(332332/6561)0.02045^2*(-0.13897)-(2470/2187)0.02045*0.13897^2-(1/81)(-0.13897)^3

Input:

$$\frac{19}{81}\times 0.39766\times 0.13897^2-\frac{2\,178\,904}{6561}\times 0.02045^3-\frac{332\,332}{6561}\times 0.02045^2\times(-0.13897)-\frac{2470}{2187}\times 0.02045\times 0.13897^2-\frac{1}{81}(-0.13897)^3$$

Result:

0.0014921521663693688462124676116445663770766651425087639 07...

0.0014921521…

-1/2*0.39766^2+26*0.02045^2-1/2*0.13897^2 -
16.9854(0.05040700320147214 8+0.001492152166369368)

Input interpretation:

$$-\frac{0.39766^2}{2}+26\times 0.02045^2-\frac{1}{2}\times 0.13897^2+$$
$$(0.050407003201472148+0.001492152166369368)\times(-16.9854)$$

Result:

−0.9593777168349352858664

-0.9593777168349352858664 result very near in absolute value to the spectral index n_s , to the mesonic Regge slope, to the inflaton value at the end of the inflation 0.9402 and to the value of the following Rogers-Ramanujan continued fraction:

$$\frac{e^{-\frac{\pi}{5}}}{\sqrt{(\varphi-1)\sqrt{5}}-\varphi+1}=1-\frac{e^{-\pi}}{1+\frac{e^{-2\pi}}{1+\frac{e^{-3\pi}}{1+\frac{e^{-4\pi}}{1+...}}}}\approx 0.9568666373$$

From:

Astronomy & Astrophysics manuscript no. ms c ESO 2019 - September 24, 2019
Planck 2018 results. VI. Cosmological parameters

The primordial fluctuations are consistent with Gaussian purely adiabatic scalar perturbations characterized by a power spectrum with a spectral index $n_s = 0.965 \pm 0.004$, consistent with the predictions of slow-roll, single-field, inflation.

From which, changing the sign and performing the 64th root:

((((-(-1/2*0.39766^2+26*0.02045^2-1/2*0.13897^2 -
16.9854(0.050407003201472148+0.001492152166369368))))))^1/64

Input interpretation:

$$\left(-\left(-\frac{0.39766^2}{2}+26\times 0.02045^2-\frac{1}{2}\times 0.13897^2+(0.050407003201472148+0.001492152166369368)\times(-16.9854)\right)\right)\text{^}\,(1/64)$$

Result:

0.99935223...

0.99935223…. result very near to the value of the following Rogers-Ramanujan continued fraction:

$$\frac{e^{-\frac{\pi}{\sqrt{5}}}}{\frac{\sqrt{5}}{1+\sqrt[5]{\sqrt{\varphi^5\sqrt[4]{5^3}}-1}}-\varphi+1}=1-\frac{e^{-\pi\sqrt{5}}}{1+\frac{e^{-2\pi\sqrt{5}}}{1+\frac{e^{-3\pi\sqrt{5}}}{1+\frac{e^{-4\pi\sqrt{5}}}{1+\ldots}}}}\approx 0.9991104684$$

and to the Omega mesons ($\omega/\omega_3 \mid 5+3 \mid m_{u/d}=255-390 \mid 0.988-1.18$) Regge slope value (0.988) connected to the dilaton scalar field $\mathbf{0.989117352243 = \phi}$

A_1^{**} above the two low-lying pseudo-scalars. (bound states of gluons, or 'glueballs').

A_1^{**}	0.943(39) [2.5]	0.988(38)	0.152(53)
A_4	1.03(10) [2.5]	0.999(32)	0.035(21)

(**Glueball Regge trajectories -** *Harvey Byron Meyer*, Lincoln College -Thesis submitted for the degree of Doctor of Philosophy at the University of Oxford Trinity Term, 2004)

From:

Universita degli Studi di Trento Dipartimento di Fisica –
Non trivial string backgrounds: Tachyons in String Field Theory and Plane-waves in DLCQ Strings - Dottorato di Ricerca in Fisica XIX Ciclo - Dicembre 2006
Forini, Valentina (2006)

Now, we have that:

The parameter α is finally related to the Koba-Nielsen variable x - in terms of which the standard formula for the Veneziano amplitude is written - through

$$x = \left(\frac{(1-\alpha^2)}{(1+\alpha^2)}\right)^2 , \qquad \alpha = \sqrt{\frac{1-\sqrt{x}}{1+\sqrt{x}}} . \qquad (2.41)$$

For x = 1/2 , we obtain:

sqrt((1-sqrt0.5)/(1+sqrt0.5))

Input:

$$\sqrt{\frac{1-\sqrt{0.5}}{1+\sqrt{0.5}}}$$

Result:

0.41421356237309504880168872420969807856967187537694807317 6...

0.414213562…

Possible closed forms:

$$\sqrt{2}-1 \approx 0.41421356237309504880168872420969807856967187537694807317 6$$

For α = 0.4142135623730950488 , we obtain:

(((1-0.4142135623730950488^2)/(1+0.4142135623730950488^2)))^2

Input interpretation:

$$\left(\frac{1 - 0.4142135623730950488^2}{1 + 0.4142135623730950488^2}\right)^2$$

Result:

0.5000000000000000000028828325499294832096743095315078589 58...

Rational form:

$$\frac{1}{2}$$

1/2

Now, we have that:

2.3.1 γ and α around 0

By using the integral representations of the elliptic functions [111] it is possible to write the equation (2.35) in a useful form

$$E(\gamma^2)\int_{\alpha\gamma}^{\gamma/\alpha} dt \frac{1}{\sqrt{t^2+\gamma^4}\sqrt{1+t^2}} - (1-\gamma^4)K(\gamma^2)\int_{\alpha\gamma}^{\gamma/\alpha} dt \frac{1}{\sqrt{t^2+\gamma^4}(\sqrt{1+t^2})^3} = \frac{\pi}{4} \quad (2.60)$$

To expand (2.60) for small γ and α we have to divide the integration region into three intervals in such a way that the square roots in the denominators of (2.60) can be consistently expanded and the integrals in t performed. For example consider the integral in the first term of (2.60), it can be rewritten as

$$\int_{\alpha\gamma}^{\gamma/\alpha} dt \frac{1}{\sqrt{t^2+\gamma^4}\sqrt{1+t^2}} = \int_{\alpha\gamma}^{\gamma^2} dt \frac{1}{\gamma^2\sqrt{1+\frac{t^2}{\gamma^4}}\sqrt{1+t^2}} + \int_{\gamma^2}^{1} dt \frac{1}{t\sqrt{1+\frac{\gamma^4}{t^2}}\sqrt{1+t^2}} + \int_{1}^{\frac{\gamma}{\alpha}} dt \frac{1}{t^2\sqrt{1+\frac{\gamma^4}{t^2}}\sqrt{1+\frac{1}{t^2}}} \quad (2.61)$$

In each integral of the rhs the integration domain is contained in the convergence radius of the Taylor expansions of the square roots containing γ, so that they can be safely expanded and the integrals in t performed.

With this procedure one gets the following equation equivalent to (2.60)

$$\begin{aligned}
&E(\gamma^2)\sum_{n,k=0}^{\infty}\frac{\Gamma(\frac{1}{2})^2}{\Gamma(\frac{1}{2}-n)\Gamma(\frac{1}{2}-k)n!k!} \\
&\left\{\frac{2}{2n+2k+1}\left[\gamma^{4k}-\left(\frac{\alpha}{\gamma}\right)^{2n+1}(\alpha\gamma)^{2k}\right]+(1-\delta_{kn})\frac{\gamma^{4n}-\gamma^{4k}}{2k-2n}-\delta_{kn}\gamma^{4n}\ln\gamma^2\right\} \\
&-(1-\gamma^4)K(\gamma^2)\sum_{n,k=0}^{\infty}\frac{\Gamma(\frac{1}{2})\Gamma(-\frac{1}{2})}{\Gamma(\frac{1}{2}-n)\Gamma(-\frac{1}{2}-k)n!k!} \\
&\left\{\frac{1}{2n+2k+1}\left[\gamma^{4k}-\left(\frac{\alpha}{\gamma}\right)^{2n+1}(\alpha\gamma)^{2k}\right]+(1-\delta_{kn})\frac{\gamma^{4n}-\gamma^{4k}}{2k-2n}-\delta_{kn}\gamma^{4n}\ln\gamma^2\right. \\
&\left.+\frac{1}{2n+2k+3}\left[\gamma^{4n}-\left(\frac{\alpha}{\gamma}\right)^{2k+3}(\alpha\gamma)^{2n}\right]\right\}=\frac{\pi}{4}
\end{aligned} \quad (2.62)$$

The series containing $\ln\gamma^2$ can be resummed, the first gives $\frac{2}{\pi}K(\gamma^2)$ the second $\frac{2}{\pi(1-\gamma^4)}E(\gamma^2)$. Hence these terms cancel and $\ln\gamma^2$ actually disappears from the equation. As a consequence one can write γ as a power series in α whose coefficients are determined requiring that eq.(2.62) is satisfied. γ turns out to contain only the powers α^{4n+1}, $n \in \mathbb{N}$. We have determined the first 12 terms of this series to get a very good approximation for γ in an extended neighbor of zero (in which sense it is an extended neighbor will be clarified later)

$$\gamma = \sqrt{3}\alpha\left(1+5\alpha^4+\frac{1041}{16}\alpha^8+\frac{38719}{32}\alpha^{12}+\frac{109062913}{4096}\alpha^{16}+\frac{5278728465}{8192}\alpha^{20}+\frac{2172202186251}{131072}\alpha^{24}+\frac{116561474500179}{262144}\alpha^{28}+\frac{3303689940814193505}{268435456}\alpha^{32}+\frac{187301165958864015157}{536870912}\alpha^{36}+\frac{865714468849507653781 49}{8589934592}\alpha^{40}+\frac{5078927050639748451791733}{17179869184}\alpha^{44}+O(\alpha^{48})\right) \quad (2.63)$$

From:

$$\gamma = \sqrt{3}\alpha\left(1+5\alpha^4+\frac{1041}{16}\alpha^8+\frac{38719}{32}\alpha^{12}+\frac{109062913}{4096}\alpha^{16}+\frac{5278728465}{8192}\alpha^{20}+\frac{2172202186251}{131072}\alpha^{24}+\frac{116561474500179}{262144}\alpha^{28}+\frac{3303689940814193505}{268435456}\alpha^{32}+\frac{187301165958864015157}{536870912}\alpha^{36}+\frac{865714468849507653781 49}{8589934592}\alpha^{40}+\frac{5078927050639748451791733}{17179869184}\alpha^{44}+O(\alpha^{48})\right) \quad (2.63)$$

We obtain:

sqrt3 * 0.4142135623730950488

1+5*(sqr2-1) ^4+(1041/16)* (sqrt2-1)^8+(38719/32)* (sqrt2-1)^12+(109062913/4096)* (sqrt2-1)^16+(5278728465/8192)* (sqrt2-1)^20+(2172202186251/131072)*(sqrt2-1)^24

(116561474500179/262144)* (sqrt2-1)^28+(3303689940814193505/268435456)* (sqrt2-1)^32

(187301165958864015157/536870912)*(sqrt2-1)^36+(865714468849507653781 49/8589934592)*(sqrt2-1)^40+(5078927050639748451791733/17179869184)*(sqrt2-1)^44+(sqrt2-1)^48

1+5*(sqr2-1) ^4+(1041/16)* (sqrt2-1)^8+(38719/32)* (sqrt2-1)^12+(109062913/4096)* (sqrt2-1)^16+(5278728465/8192)* (sqrt2-1)^20+(2172202186251/131072)*(sqrt2-1)^24

Input:

$$1+5\left(\sqrt{2}-1\right)^4+\frac{1041}{16}\left(\sqrt{2}-1\right)^8+\frac{38\,719}{32}\left(\sqrt{2}-1\right)^{12}+\frac{109\,062\,913}{4096}\left(\sqrt{2}-1\right)^{16}+\frac{5\,278\,728\,465}{8192}\left(\sqrt{2}-1\right)^{20}+\frac{2\,172\,202\,186\,251}{131\,072}\left(\sqrt{2}-1\right)^{24}$$

Result:

$$1+5\left(\sqrt{2}-1\right)^4+\frac{1041}{16}\left(\sqrt{2}-1\right)^8+\frac{38\,719}{32}\left(\sqrt{2}-1\right)^{12}+\frac{109\,062\,913\left(\sqrt{2}-1\right)^{16}}{4096}+\frac{5\,278\,728\,465\left(\sqrt{2}-1\right)^{20}}{8192}+\frac{2\,172\,202\,186\,251\left(\sqrt{2}-1\right)^{24}}{131\,072}$$

Decimal approximation:

1.279453200976378509705313381334054036156511406473130436333...

1.2794532…

Alternate forms:

$$\frac{1\,671\,029\,451\,828\,448\,599\,803-1\,181\,596\,256\,950\,335\,142\,488\sqrt{2}}{131\,072}$$

$$\frac{1\,671\,029\,451\,828\,448\,599\,803}{131\,072}-\frac{147\,699\,532\,118\,791\,892\,811}{8192\sqrt{2}}$$

$$\frac{1\,671\,029\,451\,828\,448\,599\,803-1\,181\,596\,256\,950\,335\,142\,488\sqrt{2}}{131\,072}$$

Minimal polynomial:

$$17\,179\,869\,184\,x^2-438\,050\,344\,620\,116\,829\,746\,757\,632\,x+560\,464\,915\,613\,014\,176\,725\,978\,521$$

(116561474500179/262144)* (sqrt2-1)^28+(3303689940814193505/268435456)* (sqrt2-1)^32

Input:

$$\frac{116\,561\,474\,500\,179}{262\,144}\left(\sqrt{2}-1\right)^{28}+\frac{3\,303\,689\,940\,814\,193\,505}{268\,435\,456}\left(\sqrt{2}-1\right)^{32}$$

Result:

$$\frac{116\,561\,474\,500\,179\,\left(\sqrt{2}-1\right)^{28}}{262\,144}+\frac{3\,303\,689\,940\,814\,193\,505\,\left(\sqrt{2}-1\right)^{32}}{268\,435\,456}$$

Decimal approximation:

0.015456830342824646557792171545997457255141949723424859086...

0.01545683…

Alternate forms:

$$\frac{1}{268\,435\,456}3\left(977\,533\,398\,814\,727\,354\,810\,197\,629\,899-691\,220\,495\,138\,227\,510\,820\,513\,408\,544\,\sqrt{2}\right)$$

$$\frac{2\,932\,600\,196\,444\,182\,064\,430\,592\,889\,697}{268\,435\,456}-\frac{64\,801\,921\,419\,208\,829\,139\,423\,132\,051}{4\,194\,304\,\sqrt{2}}$$

$$\frac{1}{268\,435\,456}\left(2\,932\,600\,196\,444\,182\,064\,430\,592\,889\,697-2\,073\,661\,485\,414\,682\,532\,461\,540\,225\,632\,\sqrt{2}\right)$$

Minimal polynomial:

$$72\,057\,594\,037\,927\,936\,x^2-1\,574\,427\,741\,996\,367\,182\,024\,895\,165\,392\,343\,793\,664\,x+24\,335\,662\,495\,074\,342\,330\,825\,224\,737\,869\,152\,961$$

(1873011659588640151 57/536870912)*(sqrt2-1)^36+(865714468849507653781 49/8589934592)*(sqrt2-1)^40+(5078927050639748451791733/17179869184)*(sqrt2-1)^44+(sqrt2-1)^48

Input:

$$\frac{187\,301\,165\,958\,864\,015\,157}{536\,870\,912}\left(\sqrt{2}-1\right)^{36}+\frac{86\,571\,446\,884\,950\,765\,378\,149}{8\,589\,934\,592}\left(\sqrt{2}-1\right)^{40}+\frac{5\,078\,927\,050\,639\,748\,451\,791\,733}{17\,179\,869\,184}\left(\sqrt{2}-1\right)^{44}+\left(\sqrt{2}-1\right)^{48}$$

Result:

$$\frac{187\,301\,165\,958\,864\,015\,157\left(\sqrt{2}-1\right)^{36}}{536\,870\,912}+\frac{86\,571\,446\,884\,950\,765\,378\,149\left(\sqrt{2}-1\right)^{40}}{8\,589\,934\,592}+\frac{5\,078\,927\,050\,639\,748\,451\,791\,733\left(\sqrt{2}-1\right)^{44}}{17\,179\,869\,184}+\left(\sqrt{2}-1\right)^{48}$$

Decimal approximation:

0.014967625664794291758322433101129500150630470804800106653...

0.0149676256…

Alternate forms:

$$\frac{1}{17\,179\,869\,184}15\left(11\,781\,943\,274\,794\,909\,432\,221\,947\,411\,374\,670\,100\,961-8\,331\,091\,985\,162\,719\,194\,349\,166\,410\,334\,345\,331\,772\sqrt{2}\right)$$

$$\frac{176\,729\,149\,121\,923\,641\,483\,329\,211\,170\,620\,051\,514\,415}{17\,179\,869\,184}-\frac{31\,241\,594\,944\,360\,196\,978\,809\,374\,038\,753\,794\,994\,145}{2\,147\,483\,648\sqrt{2}}$$

$$-\frac{1}{17\,179\,869\,184}15\left(8\,331\,091\,985\,162\,719\,194\,349\,166\,410\,334\,345\,331\,772\sqrt{2}-11\,781\,943\,274\,794\,909\,432\,221\,947\,411\,374\,670\,100\,961\right)$$

Minimal polynomial:

$$295\,147\,905\,179\,352\,825\,856\,x^2 - 6\,072\,367\,325\,828\,553\,254\,241\,023\,129\,434\,327\,978\,369\,981\,580\,574\,720\,x + 90\,888\,921\,032\,129\,735\,072\,580\,707\,232\,710\,848\,650\,396\,255\,799\,425$$

In conclusion, we obtain:

0.014967625664794291758322433101129500150630470804800106653...
0.015456830342824646557792171545997457255141949723424859086...
1.279453200976378509705313381334054036156511406473130436333...

Thence:

((sqrt3 * (sqrt2-1)))*(1.2794532009763785097+0.015456830342824646 5+0.014967625664794291 7)

Input interpretation:

$$\left(\sqrt{3}\left(\sqrt{2}-1\right)\right)(1.2794532009763785097 + 0.015456830342824646 5 + 0.014967625664794291 7)$$

Result:

0.9397572314876022770...

0.9397572314876….. result very near to the spectral index n_s , to the mesonic Regge slope, to the inflaton value at the end of the inflation 0.9402 and to the value of the following Rogers-Ramanujan continued fraction:

$$\frac{e^{-\frac{\pi}{5}}}{\sqrt{(\varphi-1)\sqrt{5}}-\varphi+1} = 1-\frac{e^{-\pi}}{1+\frac{e^{-2\pi}}{1+\frac{e^{-3\pi}}{1+\frac{e^{-4\pi}}{1+...}}}} \approx 0.9568666373$$

From:

Astronomy & Astrophysics manuscript no. ms c ESO 2019 - September 24, 2019
Planck 2018 results. VI. Cosmological parameters

The primordial fluctuations are consistent with Gaussian purely adiabatic scalar perturbations characterized by a power spectrum with a spectral index $n_s = 0.965 \pm 0.004$, consistent with the predictions of slow-roll, single-field, inflation.

We have that:

(2.41), it would be more natural to solve for γ as a function of α then the opposite. The solution can be found numerically and for γ as a function of x is given by the solid line in fig.2.4. γ goes from 0 to 1 while x goes from 1 to 1/2 and α goes from 0 to $\sqrt{2}-1$. To check for the accuracy of the solution, we have found two different expansions: 1) A

By plugging the expansion (2.63) in (2.54) and using (2.41), the corresponding expansion for $\kappa(\alpha)$ can be found by means of numerical integration

$$\kappa(\alpha) = \frac{8}{3\sqrt{3}} \exp \left[-2.5\,\alpha^4 - 7.1562\,\alpha^8 - 75.927\,\alpha^{12} - 1238.7\,\alpha^{16} - 24301\,\alpha^{20} - 531290\,\alpha^{24} - 1.2489\cdot 10^7\,\alpha^{28} - 3.0923\cdot 10^8\,\alpha^{32} - 7.9627\cdot 10^9\,\alpha^{36} - 2.1140\cdot 10^{11}\,\alpha^{40} - 5.7517\cdot 10^{12}\,\alpha^{44}\right] + O(\alpha^{48})\,. \quad (2.65)$$

From (2.65), we obtain:

8/(3sqrt3) exp[-2.5*((sqrt2-1)^4-7.1562(sqrt2-1)^8-75.927(sqrt2-1)^12-1238.7(sqrt2-1)^16-24301(sqrt2-1)^20-531290(sqrt2-1)^24-(1.2489e+7)(sqrt2-1)^28-(3.0923e+8)(sqrt2-1)^32-(7.9627e+9) (sqrt2-1)^36-(2.1140e+11) (sqrt2-1)^40-(5.7517e+12) (sqrt2-1)^44]+ (sqrt2-1)^48

1.4162023844838984-8/(3sqrt3) exp[(1.2489e+7)(sqrt2-1)^28-(3.0923e+8) (sqrt2-1)^32-(7.9627e+9) (sqrt2-1)^36-(2.1140e+11) (sqrt2-1)^40-(5.7517e+12) (sqrt2-1)^44]+ (sqrt2-1)^48

8/(3sqrt3) exp[-2.5*(sqrt2-1)^4-7.1562(sqrt2-1)^8-75.927(sqrt2-1)^12-1238.7(sqrt2-1)^16-24301(sqrt2-1)^20-531290(sqrt2-1)^24]

Input interpretation:

$$\frac{8}{3\sqrt{3}}\exp\left(-2.5\left(\sqrt{2}-1\right)^4+\left(\sqrt{2}-1\right)^8\times(-7.1562)+\left(\sqrt{2}-1\right)^{12}\times(-75.927)+\left(\sqrt{2}-1\right)^{16}\times(-1238.7)-24301\left(\sqrt{2}-1\right)^{20}-531290\left(\sqrt{2}-1\right)^{24}\right)$$

Result:

1.41620238448389840430271792226799070337147504473858558174 8...

1.4162023844…

Series representations:

$$\frac{1}{3\sqrt{3}}\exp\left(-2.5\left(\sqrt{2}-1\right)^4-7.1562\left(\sqrt{2}-1\right)^8-75.927\left(\sqrt{2}-1\right)^{12}-1238.7\left(\sqrt{2}-1\right)^{16}-24301\left(\sqrt{2}-1\right)^{20}-531290\left(\sqrt{2}-1\right)^{24}\right)8=$$

$$\left(8\exp\left(-2.5\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^4-7.1562\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^8-75.927\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{12}-1238.7\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{16}-24301\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{20}-531290\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{24}\right)\Big/\left(3\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(3-z_0)^k z_0^{-k}}{k!}\right)$$ for

$$(\text{not } (z_0\in\mathbb{R} \text{ and } -\infty<z_0\le 0))$$

$$\frac{1}{3\sqrt{3}}\exp\left(-2.5\left(\sqrt{2}-1\right)^4-7.1562\left(\sqrt{2}-1\right)^8-75.927\left(\sqrt{2}-1\right)^{12}-\right.$$
$$\left.1238.7\left(\sqrt{2}-1\right)^{16}-24301\left(\sqrt{2}-1\right)^{20}-531290\left(\sqrt{2}-1\right)^{24}\right)8=$$
$$\left(8\exp\left(\left(\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^4\right.\right.\right.$$
$$\left(-2.5-24301\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{16}-\right.$$
$$531290\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{20}-$$
$$7.1562\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{4}-$$
$$75.927\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{8}-$$
$$\left.\left.\left.1238.7\left(-1+\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)^{12}\right)\right)\right)\Big/$$
$$\left(3\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(3-z_0)^k z_0^{-k}}{k!}\right)\text{ for}$$
$$\left(\text{not}\left(z_0\in\mathbb{R}\text{ and }-\infty<z_0\le 0\right)\right)$$

$$\frac{1}{3\sqrt{3}}\exp\left(-2.5\left(\sqrt{2}-1\right)^4-7.1562\left(\sqrt{2}-1\right)^8-75.927\left(\sqrt{2}-1\right)^{12}-1238.7\left(\sqrt{2}-1\right)^{16}-24301\left(\sqrt{2}-1\right)^{20}-531290\left(\sqrt{2}-1\right)^{24}\right)8=$$
$$\left(8\exp\left(-2.5\left(-1+\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)^4-7.1562\left(-1+\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)^8-75.927\left(-1+\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)^{12}-1238.7\left(-1+\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)^{16}-24301\left(-1+\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)^{20}-531290\left(-1+\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)^{24}\right)\Bigg/\left(3\exp\left(i\pi\left\lfloor\frac{\arg(3-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(3-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
for $(x\in\mathbb{R}$ and $x<0)$

Thence, in conclusion:

1.4162023844838984-8/(3sqrt3) exp[(1.2489e+7)(sqrt2-1)^28-(3.0923e+8) (sqrt2-1)^32-(7.9627e+9) (sqrt2-1)^36-(2.1140e+11) (sqrt2-1)^40-(5.7517e+12) (sqrt2-1)^44] + (sqrt2-1)^48

Input interpretation:

$$1.4162023844838984-\frac{8}{3\sqrt{3}}\exp\left(1.2489\times10^7\left(\sqrt{2}-1\right)^{28}-3.0923\times10^8\left(\sqrt{2}-1\right)^{32}-7.9627\times10^9\left(\sqrt{2}-1\right)^{36}-2.1140\times10^{11}\left(\sqrt{2}-1\right)^{40}-5.7517\times10^{12}\left(\sqrt{2}-1\right)^{44}\right)-\left(\sqrt{2}-1\right)^{48}$$

Result:

−0.12300834783018758114523612062011042700142573224566413480...

-0.12300834783…..

From which:

[-1/(((1.4162023844838984-8/(3sqrt3) exp[(1.2489e+7)(sqrt2-1)^28-(3.0923e+8)(sqrt2-1)^32-(7.9627e+9) (sqrt2-1)^36-(2.1140e+11) (sqrt2-1)^40-(5.7517e+12)(sqrt2-1)^44] + (sqrt2-1)^48)))]^4+4-276

Input interpretation:

$$\left(-\left(1\Big/\left(1.4162023844838984 - \frac{8}{3\sqrt{3}}\exp\left(1.2489\times10^{7}\left(\sqrt{2}-1\right)^{28} - 3.0923\times10^{8}\left(\sqrt{2}-1\right)^{32} - 7.9627\times10^{9}\left(\sqrt{2}-1\right)^{36} - 2.1140\times10^{11}\left(\sqrt{2}-1\right)^{40} - 5.7517\times10^{12}\left(\sqrt{2}-1\right)^{44}\right) + \left(\sqrt{2}-1\right)^{48}\right)\right)\right)^{4} + 4 - 276$$

Result:

4095.789083429694446595928391328004788772236072889033656245...

4095.789… ≈ 4096

27((([-1/(((1.4162023844838-8/(3sqrt3) exp[(1.2489e+7)(sqrt2-1)^28-(3.0923e+8)(sqrt2-1)^32-(7.9627e+9)(sqrt2-1)^36-(2.1140e+11)(sqrt2-1)^40-(5.7517e+12)(sqrt2-1)^44]+(sqrt2-1)^48)))]^4+4-276)))^0.5

Input interpretation:

$$27\sqrt{\left(\left(-\left(1\Big/\left(1.4162023844838 - \frac{8}{3\sqrt{3}}\exp\left(1.2489\times10^{7}\left(\sqrt{2}-1\right)^{28} - 3.0923\times10^{8}\left(\sqrt{2}-1\right)^{32} - 7.9627\times10^{9}\left(\sqrt{2}-1\right)^{36} - 2.1140\times10^{11}\left(\sqrt{2}-1\right)^{40} - 5.7517\times10^{12}\left(\sqrt{2}-1\right)^{44}\right) + \left(\sqrt{2}-1\right)^{48}\right)\right)\right)^{4} + 4 - 276\right)}$$

Result:

1727.96...

1727.96… ≈ 1728

This result is very near to the mass of candidate glueball **f_0(1710) scalar meson.** Furthermore, 1728 occurs in the algebraic formula for the j-invariant of an elliptic

curve. The number 1728 is one less than the Hardy–Ramanujan number 1729 (taxicab number)

With regard 27 (From Wikipedia):

"The fundamental group of the complex form, compact real form, or any algebraic version of E_6 is the cyclic group $\boldsymbol{Z}/3\boldsymbol{Z}$, and its outer automorphism group is the cyclic group $\boldsymbol{Z}/2\boldsymbol{Z}$. Its fundamental representation is 27-dimensional (complex), and a basis is given by the 27 lines on a cubic surface. The dual representation, which is inequivalent, is also 27-dimensional. In particle physics, E_6 plays a role in some grand unified theories".

Now, we have that:

$$x = \frac{1}{2} + \frac{1}{8}(1-\gamma)^2\left[1 - 2\log\left(\tfrac{1-\gamma}{4}\right)\right] - \frac{1}{4}(1-\gamma)^3\log\left(\tfrac{1-\gamma}{4}\right) -$$
$$\frac{1}{16}(1-\gamma)^4\left[1 + 3\log\left(\tfrac{1-\gamma}{4}\right)\right] - \frac{1}{96}(1-\gamma)^5\left[7 + 12\log\left(\tfrac{1-\gamma}{4}\right)\right] +$$
$$\frac{1}{1536}(1-\gamma)^6\left[-97 - 108\log\left(\tfrac{1-\gamma}{4}\right) - 24\log^2\left(\tfrac{1-\gamma}{4}\right) + 64\log^3\left(\tfrac{1-\gamma}{4}\right)\right] -$$
$$\frac{1}{2560}(1-\gamma)^7\left[119 + 100\log\left(\tfrac{1-\gamma}{4}\right) - 40\log^2\left(\tfrac{1-\gamma}{4}\right) - 320\log^3\left(\tfrac{1-\gamma}{4}\right)\right] +$$
$$\frac{1}{10240}(1-\gamma)^8\left[-321 - 60\log\left(\tfrac{1-\gamma}{4}\right) + 1240\log^2\left(\tfrac{1-\gamma}{4}\right) + 2240\log^3\left(\tfrac{1-\gamma}{4}\right)\right] +$$
$$\frac{1}{107520}(1-\gamma)^9\left[-1871 + 5740\log\left(\tfrac{1-\gamma}{4}\right) + 29120\log^2\left(\tfrac{1-\gamma}{4}\right) + 31360\log^3\left(\tfrac{1-\gamma}{4}\right)\right] + \ldots \quad (2.67)$$

From (2.64) one can easily get x as a function of γ in the region $x \sim 1$ ($\gamma \sim 0$) so that $x(\gamma)$ can be obtained for the whole range $1/2 < x < 1$. The two expansions in fact overlap in a long range for $0.3 \leq \gamma \leq 0.7$ as it is shown in fig.2.5. They have an excellent agreement up to the 13-th significative digit for $0.6 \leq \gamma \leq 0.7$.

From eq.(2.67), we obtain:

For γ = 0.9397572314876 , we obtain:

a)

1/2+1/8(1-0.9397572314876)^2 [1-2 ln((1-0.9397572314876)/4)]-1/4(1-0.9397572314876)^3 ln ((1-0.9397572314876)/4)

Input interpretation:

$$\frac{1}{2}+\frac{1}{8}(1-0.9397572314876)^2\left(1-2\log\left(\frac{1-0.9397572314876}{4}\right)\right)-\left(\frac{1}{4}(1-0.9397572314876)^3\right)\log\left(\frac{1-0.9397572314876}{4}\right)$$

$\log(x)$ is the natural logarithm

Result:

0.50448969570049...

0.50448969570049…. result near to the value of the following Ramanujan continued fraction:

$$2\int_0^\infty \frac{t^2\,dt}{e^{\sqrt{3}t}\sinh t}=\cfrac{1}{1+\cfrac{1^3}{1+\cfrac{1^3}{3+\cfrac{2^3}{1+\cfrac{2^3}{5+\cfrac{3^3}{1+\cfrac{3^3}{7+\ldots}}}}}}}\approx 0.5269391135$$

= 0.5269391135

Series representations:

$$\frac{1}{2}+\frac{1}{8}(1-0.93975723148760000)^2\left(1-2\log\left(\frac{1-0.93975723148760000}{4}\right)\right)-\frac{1}{4}\log\left(\frac{1-0.93975723148760000}{4}\right)(1-0.93975723148760000)^3=$$

$$0.500453648894755+0.000961955920214895\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}$$

$$\frac{1}{2}+\frac{1}{8}(1-0.93975723148760000)^2\left(1-2\log\left(\frac{1-0.93975723148760000}{4}\right)\right)-\frac{1}{4}\log\left(\frac{1-0.93975723148760000}{4}\right)(1-0.93975723148760000)^3=0.500453648894755-0.00192391184042979\,i\,\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\pi}\right\rfloor-0.000961955920214895\log(x)+0.000961955920214895\sum_{k=1}^{\infty}\frac{(-1)^k(0.01506069212810000-x)^k x^{-k}}{k}\quad\text{for } x<0$$

$$\frac{1}{2}+\frac{1}{8}(1-0.93975723148760000)^2\left(1-2\log\left(\frac{1-0.93975723148760000}{4}\right)\right)-\frac{1}{4}\log\left(\frac{1-0.93975723148760000}{4}\right)(1-0.93975723148760000)^3=0.500453648894755-0.000961955920214895\left\lfloor\frac{\arg(0.01506069212810000-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-0.000961955920214895\log(z_0)-0.000961955920214895\left\lfloor\frac{\arg(0.01506069212810000-z_0)}{2\pi}\right\rfloor\log(z_0)+0.000961955920214895\sum_{k=1}^{\infty}\frac{(-1)^k(0.01506069212810000-z_0)^k z_0^{-k}}{k}$$

b)

-1/16(1-0.9397572314876)^4 [1+3 ln((1-0.9397572314876)/4)]-1/96(1-0.9397572314876)^5 [7+12 ln((1-0.9397572314876)/4)]

Input interpretation:

$$-\frac{1}{16}(1-0.9397572314876)^4\left(1+3\log\left(\frac{1-0.9397572314876}{4}\right)\right)-\left(\frac{1}{96}(1-0.9397572314876)^5\right)\left(7+12\log\left(\frac{1-0.9397572314876}{4}\right)\right)$$

$\log(x)$ is the natural logarithm

Result:

$9.8965751842\ldots\times10^{-6}$

9.8965751842…*10^{-6}

Alternative representations:

$$\frac{1}{16}\left((1-0.93975723148760000)^4\left(1+3\log\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)-\frac{1}{96}\left(7+12\log\left(\frac{1-0.93975723148760000}{4}\right)\right)(1-0.93975723148760000)^5=-\frac{1}{16}\left(1+3\log(a)\log_a\left(\frac{0.06024276851240000}{4}\right)\right)0.06024276851240000^4-\frac{1}{96}\left(7+12\log(a)\log_a\left(\frac{0.06024276851240000}{4}\right)\right)0.06024276851240000^5$$

$$\frac{1}{16}\left((1-0.93975723148760000)^4\left(1+3\log\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)-\frac{1}{96}\left(7+12\log\left(\frac{1-0.93975723148760000}{4}\right)\right)(1-0.93975723148760000)^5=-\frac{1}{16}\left(1+3\log_e\left(\frac{0.06024276851240000}{4}\right)\right)0.06024276851240000^4-\frac{1}{96}\left(7+12\log_e\left(\frac{0.06024276851240000}{4}\right)\right)0.06024276851240000^5$$

$$\frac{1}{16}\left((1-0.93975723148760000)^4\left(1+3\log\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)-\frac{1}{96}\left(7+12\log\left(\frac{1-0.93975723148760000}{4}\right)\right)(1-0.93975723148760000)^5=-\frac{1}{16}\left(1-3\,\mathrm{Li}_1\left(1-\frac{0.06024276851240000}{4}\right)\right)0.06024276851240000^4-\frac{1}{96}\left(7-12\,\mathrm{Li}_1\left(1-\frac{0.06024276851240000}{4}\right)\right)0.06024276851240000^5$$

Series representations:

$$\frac{1}{16}\left((1-0.93975723148760000)^4\left(1+3\log\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)-\frac{1}{96}\left(7+12\log\left(\frac{1-0.93975723148760000}{4}\right)\right)(1-0.93975723148760000)^5=-8.8104568021130\times10^{-7}+2.56875023888250\times10^{-6}\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}$$

$$\frac{1}{16}\left((1-0.93975723148760000)^4\left(1+3\log\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)-\frac{1}{96}\left(7+12\log\left(\frac{1-0.93975723148760000}{4}\right)\right)(1-0.93975723148760000)^5=-8.8104568021130\times10^{-7}-5.13750047776500\times10^{-6}\,i\,\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\,\pi}\right\rfloor-2.56875023888250\times10^{-6}\log(x)+2.56875023888250\times10^{-6}\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\quad\text{for } x<0$$

$$\frac{1}{16}\left((1-0.93975723148760000)^4\left(1+3\log\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)-\frac{1}{96}\left(7+12\log\left(\frac{1-0.93975723148760000}{4}\right)\right)(1-0.93975723148760000)^5=-8.8104568021130\times10^{-7}-2.56875023888250\times10^{-6}\left\lfloor\frac{\arg(0.01506069212810000-z_0)}{2\,\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-2.56875023888250\times10^{-6}\log(z_0)-2.56875023888250\times10^{-6}\left\lfloor\frac{\arg(0.01506069212810000-z_0)}{2\,\pi}\right\rfloor\log(z_0)+2.56875023888250\times10^{-6}\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-z_0)^k\,z_0^{-k}}{k}$$

Integral representation:

$$\frac{1}{16}\left((1-0.93975723148760000)^4\left(1+3\log\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)-\frac{1}{96}\left(7+12\log\left(\frac{1-0.93975723148760000}{4}\right)\right)(1-0.93975723148760000)^5=-8.8104568021130\times10^{-7}-2.56875023888250\times10^{-6}\int_1^{0.01506069212810000}\frac{1}{t}\,dt$$

c)

1/1536(1-0.9397572314876)^6 [-97-108 ln((1-0.9397572314876)/4)-24 ln^2((1-0.9397572314876)/4)+64 ln^3((1-0.9397572314876)/4)]

Input interpretation:

$$\frac{1}{1536}(1-0.9397572314876)^6\left(-97-108\log\left(\frac{1-0.9397572314876}{4}\right)-24\log^2\left(\frac{1-0.9397572314876}{4}\right)+64\log^3\left(\frac{1-0.9397572314876}{4}\right)\right)$$

$\log(x)$ is the natural logarithm

Result:

$-1.4916789982\ldots \times 10^{-7}$

-1.4916789982…*10^-7

Alternative representations:

$$\frac{1}{1536}(1-0.93975723148760000)^6\left(-97-108\log\left(\frac{1-0.93975723148760000}{4}\right)-24\log^2\left(\frac{1-0.93975723148760000}{4}\right)+64\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=\frac{1}{1536}0.06024276851240000^6\left(-97-108\log_e\left(\frac{0.06024276851240000}{4}\right)-24\log_e^2\left(\frac{0.06024276851240000}{4}\right)+64\log_e^3\left(\frac{0.06024276851240000}{4}\right)\right)$$

$$\frac{1}{1536}(1-0.93975723148760000)^6\left(-97-108\log\left(\frac{1-0.93975723148760000}{4}\right)-24\log^2\left(\frac{1-0.93975723148760000}{4}\right)+64\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=\frac{1}{1536}0.06024276851240000^6\left(-97-108\log(a)\log_a\left(\frac{0.06024276851240000}{4}\right)-24\left(\log(a)\log_a\left(\frac{0.06024276851240000}{4}\right)\right)^2+64\left(\log(a)\log_a\left(\frac{0.06024276851240000}{4}\right)\right)^3\right)$$

$$\frac{1}{1536}(1-0.93975723148760000)^6\left(-97-108\log\left(\frac{1-0.93975723148760000}{4}\right)-24\log^2\left(\frac{1-0.93975723148760000}{4}\right)+64\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=\frac{1}{1536}0.06024276851240000^6\left(-97+108\,\mathrm{Li}_1\left(1-\frac{0.06024276851240000}{4}\right)-24\left(-\mathrm{Li}_1\left(1-\frac{0.06024276851240000}{4}\right)\right)^2+64\left(-\mathrm{Li}_1\left(1-\frac{0.06024276851240000}{4}\right)\right)^3\right)$$

Series representations:

$$\frac{1}{1536}(1-0.93975723148760000)^6\left(-97-108\log\left(\frac{1-0.93975723148760000}{4}\right)-24\log^2\left(\frac{1-0.93975723148760000}{4}\right)+64\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=-1.99167416812756\times10^{-9}\left(1.79037187748594+1.000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}\right)\left(0.8465420056353-1.4153718774859\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}+1.00000000000000\left(\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}\right)^2\right)$$

$$\frac{1}{1536}(1-0.93975723148760000)^6\left(-97-108\log\left(\frac{1-0.93975723148760000}{4}\right)-24\log^2\left(\frac{1-0.93975723148760000}{4}\right)+64\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=1.99167416812756\times10^{-9}\left(-1.79037187748594+1.000000000000000\sum_{j=1}^{\infty}\text{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\right)\left(0.8465420056353+1.4153718774859\sum_{j=1}^{\infty}\text{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}+1.00000000000000\left(\sum_{j=1}^{\infty}\text{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\right)^2\right)$$

$$\frac{1}{1536}(1-0.93975723148760000)^6\left(-97-108\log\left(\frac{1-0.93975723148760000}{4}\right)-24\log^2\left(\frac{1-0.93975723148760000}{4}\right)+64\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=-3.01863116106834\times10^{-9}-3.36095015871527\times10^{-9}\left(2i\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)-7.46877813047837\times10^{-10}\left(2i\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)^2+1.99167416812756\times10^{-9}\left(2i\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)^3\quad\text{for } x<0$$

Integral representation:

$$\frac{1}{1536}(1-0.93975723148760000)^6\left(-97-108\log\left(\frac{1-0.93975723148760000}{4}\right)-24\log^2\left(\frac{1-0.93975723148760000}{4}\right)+64\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=1.99167416812756\times10^{-9}\left(-1.79037187748594+1.000000000000000\int_1^{0.01506069212810000}\frac{1}{t}\,dt\right)\left(0.8465420056353+1.4153718774859\int_1^{0.01506069212810000}\frac{1}{t}\,dt+1.00000000000000\left(\int_1^{0.01506069212810000}\frac{1}{t}\,dt\right)^2\right)$$

d)

-1/2560(1-0.9397572314876)^7 [119+100 ln((1-0.9397572314876)/4)-40 ln^2((1-0.9397572314876)/4)-320 ln^3((1-0.9397572314876)/4)]

Input interpretation:

$$-\frac{1}{2560}(1-0.9397572314876)^7\left(119+100\log\left(\frac{1-0.9397572314876}{4}\right)-40\log^2\left(\frac{1-0.9397572314876}{4}\right)-320\log^3\left(\frac{1-0.9397572314876}{4}\right)\right)$$

$\log(x)$ is the natural logarithm

Result:

$-2.5455515856\ldots\times10^{-8}$

-2.5455515856…*10^-8

Alternative representations:

$$\frac{1}{2560}\left((1-0.93975723148760000)^7\left(119+100\log\left(\frac{1-0.93975723148760000}{4}\right)-40\log^2\left(\frac{1-0.93975723148760000}{4}\right)-320\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)=-\frac{1}{2560}\,0.06024276851240000^7\left(119+100\log_e\left(\frac{0.06024276851240000}{4}\right)-40\log_e^2\left(\frac{0.06024276851240000}{4}\right)-320\log_e^3\left(\frac{0.06024276851240000}{4}\right)\right)$$

$$\frac{1}{2560}\left((1-0.93975723148760000)^7\left(119+100\log\left(\frac{1-0.93975723148760000}{4}\right)-40\log^2\left(\frac{1-0.93975723148760000}{4}\right)-320\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)=-\frac{1}{2560}\,0.06024276851240000^7\left(119+100\log(a)\log_a\left(\frac{0.06024276851240000}{4}\right)-40\left(\log(a)\log_a\left(\frac{0.06024276851240000}{4}\right)\right)^2-320\left(\log(a)\log_a\left(\frac{0.06024276851240000}{4}\right)\right)^3\right)$$

$$\frac{1}{2560}\left((1-0.93975723148760000)^7\left(119+100\log\left(\frac{1-0.93975723148760000}{4}\right)-40\log^2\left(\frac{1-0.93975723148760000}{4}\right)-320\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)=$$
$$-\frac{1}{2560}\,0.06024276851240000^7\left(119-100\,\text{Li}_1\left(1-\frac{0.06024276851240000}{4}\right)-40\left(-\text{Li}_1\left(1-\frac{0.06024276851240000}{4}\right)\right)^2-320\left(-\text{Li}_1\left(1-\frac{0.06024276851240000}{4}\right)\right)^3\right)$$

Series representations:

$$\frac{1}{2560}\left((1-0.93975723148760000)^7\left(119+100\log\left(\frac{1-0.93975723148760000}{4}\right)-40\log^2\left(\frac{1-0.93975723148760000}{4}\right)-320\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)=$$
$$-0.000711346975200138\left(0.81616115733825+1.000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}\right)\left(2.3056004026682\times10^{-7}-4.7624121045095\times10^{-7}\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}+5.06014519126386\times10^{-7}\left(\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}\right)^2\right)$$

$$\frac{1}{2560}\left((1-0.93975723148760000)^7\left(119+100\log\left(\frac{1-0.93975723148760000}{4}\right)-40\log^2\left(\frac{1-0.93975723148760000}{4}\right)-320\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)=$$

$$0.000711346975200138\left(-0.81616115733825+1.000000000000000\sum_{j=1}^{\infty}\text{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\right)\left(2.3056004026682\times10^{-7}+4.7624121045095\times10^{-7}\sum_{j=1}^{\infty}\text{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}+5.06014519126386\times10^{-7}\left(\sum_{j=1}^{\infty}\text{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\right)^2\right)$$

$$\frac{1}{2560}\left((1-0.93975723148760000)^7\left(119+100\log\left(\frac{1-0.93975723148760000}{4}\right)-40\log^2\left(\frac{1-0.93975723148760000}{4}\right)-320\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)=$$

$$-1.33857111915503\times10^{-10}-1.12484967996221\times10^{-10}\left(2\,i\,\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)+4.49939871984884\times10^{-11}\left(2\,i\,\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)^2+3.59951897587907\times10^{-10}\left(2\,i\,\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)^3 \quad \text{for } x<0$$

Integral representation:

$$\frac{1}{2560}\left((1-0.93975723148760000)^7\left(119+100\log\left(\frac{1-0.93975723148760000}{4}\right)-40\log^2\left(\frac{1-0.93975723148760000}{4}\right)-320\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)\right)(-1)=0.000711346975200138$$

$$\left(-0.81616115733825+1.000000000000000\int_1^{0.015060692128100000}\frac{1}{t}\,dt\right)\left(2.3056004026682\times10^{-7}+4.7624121045095\times10^{-7}\int_1^{0.015060692128100000}\frac{1}{t}\,dt+5.06014519126386\times10^{-7}\left(\int_1^{0.015060692128100000}\frac{1}{t}\,dt\right)^2\right)$$

e)

1/10240(1-0.9397572314876)^8 [-321-60 ln((1-0.9397572314876)/4)+1240 ln^2((1-0.9397572314876)/4)+2240 ln^3 ((1-0.9397572314876)/4)]

Input interpretation:

$$\frac{1}{10\,240}(1-0.9397572314876)^8\left(-321-60\log\left(\frac{1-0.9397572314876}{4}\right)+1240\log^2\left(\frac{1-0.9397572314876}{4}\right)+2240\log^3\left(\frac{1-0.9397572314876}{4}\right)\right)$$

$\log(x)$ is the natural logarithm

Result:

$-2.4341661832\ldots\times10^{-9}$

-2.4341661832…*10^{-9}

Alternative representations:

$$\frac{1}{10\,240}(1-0.93975723148760000)^8\left(-321-60\log\left(\frac{1-0.93975723148760000}{4}\right)+1240\log^2\left(\frac{1-0.93975723148760000}{4}\right)+2240\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=\frac{1}{10\,240}\,0.060242768512400008\left(-321-60\log_e\left(\frac{0.060242768512400000}{4}\right)+1240\log_e^2\left(\frac{0.060242768512400000}{4}\right)+2240\log_e^3\left(\frac{0.060242768512400000}{4}\right)\right)$$

$$\frac{1}{10\,240}(1-0.93975723148760000)^8\left(-321-60\log\left(\frac{1-0.93975723148760000}{4}\right)+1240\log^2\left(\frac{1-0.93975723148760000}{4}\right)+2240\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=\frac{1}{10\,240}\,0.060242768512400008\left(-321-60\log(a)\log_a\left(\frac{0.060242768512400000}{4}\right)+1240\left(\log(a)\log_a\left(\frac{0.060242768512400000}{4}\right)\right)^2+2240\left(\log(a)\log_a\left(\frac{0.060242768512400000}{4}\right)\right)^3\right)$$

$$\frac{1}{10\,240}(1-0.93975723148760000)^8\left(-321-60\log\left(\frac{1-0.93975723148760000}{4}\right)+1240\log^2\left(\frac{1-0.93975723148760000}{4}\right)+2240\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=\frac{1}{10\,240}\,0.060242768512400008\left(-321+60\,\mathrm{Li}_1\left(1-\frac{0.060242768512400000}{4}\right)+1240\left(-\mathrm{Li}_1\left(1-\frac{0.060242768512400000}{4}\right)\right)^2+2240\left(-\mathrm{Li}_1\left(1-\frac{0.060242768512400000}{4}\right)\right)^3\right)$$

Series representations:

$$\frac{1}{10\,240}(1-0.93975723148760000)^8\left(-321-60\log\left(\frac{1-0.93975723148760000}{4}\right)+1240\log^2\left(\frac{1-0.93975723148760000}{4}\right)+2240\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=-0.000336043742455253\left(0.40160911720857+1.000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}\right)\left(4.029443550763\times10^{-8}-1.0786414218924\times10^{-7}\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}+1.129253968433322\times10^{-7}\left(\sum_{k=1}^{\infty}\frac{(-1)^k\,(-0.98493930787190000)^k}{k}\right)^2\right)$$

$$\frac{1}{10\,240}(1-0.93975723148760000)^8\left(-321-60\log\left(\frac{1-0.93975723148760000}{4}\right)+1240\log^2\left(\frac{1-0.93975723148760000}{4}\right)+2240\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=0.000336043742455253\left(-0.40160911720857+1.000000000000000\sum_{j=1}^{\infty}\text{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\right)\left(4.029443550763\times10^{-8}+1.0786414218924\times10^{-7}\sum_{j=1}^{\infty}\text{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}+1.129253968433322\times10^{-7}\left(\sum_{j=1}^{\infty}\text{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\right)^2\right)$$

$$\frac{1}{10\,240}(1-0.93975723148760000)^8\left(-321-60\log\left(\frac{1-0.93975723148760000}{4}\right)+1240\log^2\left(\frac{1-0.93975723148760000}{4}\right)+2240\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=$$
$$-5.43806572521715\times10^{-12}-1.01646088321816\times10^{-12}\left(2\,i\,\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)+$$
$$2.10068582531753\times10^{-11}\left(2\,i\,\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)^2+$$
$$3.79478729734780\times10^{-11}\left(2\,i\,\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\,\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)^3\quad\text{for } x<0$$

Integral representation:

$$\frac{1}{10\,240}(1-0.93975723148760000)^8\left(-321-60\log\left(\frac{1-0.93975723148760000}{4}\right)+1240\log^2\left(\frac{1-0.93975723148760000}{4}\right)+2240\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=0.000336043742455253$$
$$\left(-0.40160911720857+1.000000000000000\int_1^{0.01506069212810000}\frac{1}{t}\,dt\right)\left(4.029443550763\times10^{-8}+1.0786414218924\times10^{-7}\int_1^{0.01506069212810000}\frac{1}{t}\,dt+1.129253968433322\times10^{-7}\left(\int_1^{0.01506069212810000}\frac{1}{t}\,dt\right)^2\right)$$

f)

1/107520(1-0.9397572314876)^8 [-1871+5740 ln((1-0.9397572314876)/4)+29120 ln^2((1-0.9397572314876)/4)+31360 ln^3((1-0.9397572314876)/4)]

Input interpretation:

$$\frac{1}{107520}(1-0.9397572314876)^8\left(-1871+5740\log\left(\frac{1-0.9397572314876}{4}\right)+29\,120\log^2\left(\frac{1-0.9397572314876}{4}\right)+31\,360\log^3\left(\frac{1-0.9397572314876}{4}\right)\right)$$

$\log(x)$ is the natural logarithm

Result:

$-2.9518556216\ldots\times10^{-9}$

-2.9518556216…*10^{-9}

Alternative representations:

$$\frac{1}{107520}(1-0.93975723148760000)^8\left(-1871+5740\log\left(\frac{1-0.93975723148760000}{4}\right)+29\,120\log^2\left(\frac{1-0.93975723148760000}{4}\right)+31\,360\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=\frac{1}{107520}0.060242768512400000^8\left(-1871+5740\log_e\left(\frac{0.060242768512400000}{4}\right)+29\,120\log_e^2\left(\frac{0.060242768512400000}{4}\right)+31\,360\log_e^3\left(\frac{0.060242768512400000}{4}\right)\right)$$

$$\frac{1}{107520}$$
$$(1-0.93975723148760000)^8\left(-1871+5740\log\left(\frac{1-0.93975723148760000}{4}\right)+29\,120\log^2\left(\frac{1-0.93975723148760000}{4}\right)+31\,360\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=\frac{1}{107520}0.060242768512400000^8\left(-1871+5740\log(a)\log_a\left(\frac{0.060242768512400000}{4}\right)+29\,120\left(\log(a)\log_a\left(\frac{0.060242768512400000}{4}\right)\right)^2+31\,360\left(\log(a)\log_a\left(\frac{0.060242768512400000}{4}\right)\right)^3\right)$$

$$\frac{1}{107520}$$
$$(1-0.93975723148760000)^8\left(-1871+5740\log\left(\frac{1-0.93975723148760000}{4}\right)+29\,120\log^2\left(\frac{1-0.93975723148760000}{4}\right)+31\,360\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=\frac{1}{107520}0.060242768512400000^8\left(-1871-5740\,\mathrm{Li}_1\left(1-\frac{0.060242768512400000}{4}\right)+29\,120\left(-\mathrm{Li}_1\left(1-\frac{0.060242768512400000}{4}\right)\right)^2+31\,360\left(-\mathrm{Li}_1\left(1-\frac{0.060242768512400000}{4}\right)\right)^3\right)$$

Series representations:

$$\frac{1}{107520}(1-0.93975723148760000)^8\left(-1871+5740\log\left(\frac{1-0.93975723148760000}{4}\right)+29120\log^2\left(\frac{1-0.93975723148760000}{4}\right)+31360\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=-0.000369863996677842\left(0.16445405726841+1.000000000000000\sum_{k=1}^{\infty}\frac{(-1)^k(-0.98493930787190000)^k}{k}\right)\left(4.962919804390\times10^{-8}-1.4952520445708\times10^{-7}\sum_{k=1}^{\infty}\frac{(-1)^k(-0.98493930787190000)^k}{k}+1.36799376038507\times10^{-7}\left(\sum_{k=1}^{\infty}\frac{(-1)^k(-0.98493930787190000)^k}{k}\right)^2\right)$$

$$\frac{1}{107520}(1-0.93975723148760000)^8\left(-1871+5740\log\left(\frac{1-0.93975723148760000}{4}\right)+29120\log^2\left(\frac{1-0.93975723148760000}{4}\right)+31360\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=0.000369863996677842\left(-0.16445405726841+1.000000000000000\sum_{j=1}^{\infty}\operatorname{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\right)\left(4.962919804390\times10^{-8}+1.4952520445708\times10^{-7}\sum_{j=1}^{\infty}\operatorname{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}+1.36799376038507\times10^{-7}\left(\sum_{j=1}^{\infty}\operatorname{Res}_{s=-j}\frac{(-0.98493930787190000)^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\right)^2\right)$$

$$\frac{1}{107520}(1-0.93975723148760000)^8\left(-1871+5740\log\left(\frac{1-0.93975723148760000}{4}\right)+29\,120\log^2\left(\frac{1-0.93975723148760000}{4}\right)+31\,360\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=-3.01872748016060\times10^{-12}+9.2610880470988\times10^{-12}\left(2i\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)+4.69830808243060\times10^{-11}\left(2i\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)^2+5.05971639646373\times10^{-11}\left(2i\pi\left\lfloor\frac{\arg(0.01506069212810000-x)}{2\pi}\right\rfloor+\log(x)-\sum_{k=1}^{\infty}\frac{(-1)^k\,(0.01506069212810000-x)^k\,x^{-k}}{k}\right)^3\quad\text{for } x<0$$

Integral representation:

$$\frac{1}{107520}(1-0.93975723148760000)^8\left(-1871+5740\log\left(\frac{1-0.93975723148760000}{4}\right)+29\,120\log^2\left(\frac{1-0.93975723148760000}{4}\right)+31\,360\log^3\left(\frac{1-0.93975723148760000}{4}\right)\right)=0.000369863996677842\left(-0.16445405726841+1.000000000000000\int_1^{0.01506069212810000}\frac{1}{t}\,dt\right)\left(4.962919804390\times10^{-8}+1.4952520445708\times10^{-7}\int_1^{0.01506069212810000}\frac{1}{t}\,dt+1.36799376038507\times10^{-7}\left(\int_1^{0.01506069212810000}\frac{1}{t}\,dt\right)^2\right)$$

In conclusion, we obtain:

(0.50448969570049)-(9.8965751842 × 10^-6)+(-1.4916789982 × 10^-7)-(-2.5455515856 × 10^-8)+(-2.4341661832 × 10^-9)+(-2.9518556216 × 10^-9)

Input interpretation:

$$0.50448969570049 - 9.8965751842 \times 10^{-6} - 1.4916789982 \times 10^{-7} - \\ -2.5455515856 \times 10^{-8} - 2.4341661832 \times 10^{-9} - 2.9518556216 \times 10^{-9}$$

Result:

0.5044796700269000312

0.5044796700269000312 as above

From which:

1/(8^2+2^5+4)+2(0.50447967)^1/Pi

Input interpretation:

$$\frac{1}{8^2+2^5+4} + 2\sqrt[\pi]{0.50447967}$$

Result:

1.6185783...

1.6185783…. result that is a very good approximation to the value of the golden ratio 1.618033988749...

Alternative representations:

$$\frac{1}{8^2+2^5+4} + 2\sqrt[\pi]{0.50448} = 2\sqrt[180^\circ]{0.50448} + \frac{1}{4+2^5+8^2}$$

$$\frac{1}{8^2+2^5+4} + 2\sqrt[\pi]{0.50448} = 2 \times 0.50448^{-1/(i \log(-1))} + \frac{1}{4+2^5+8^2}$$

$$\frac{1}{8^2+2^5+4} + 2\sqrt[\pi]{0.50448} = 2\sqrt[\cos^{-1}(-1)]{0.50448} + \frac{1}{4+2^5+8^2}$$

Series representations:

$$\frac{1}{8^2+2^5+4} + 2\sqrt[\pi]{0.50448} = \frac{1}{100} + 2^{4\sum_{k=0}^{\infty}\frac{(-1)^k}{1+2k}\sqrt{0.50448}}$$

$$\frac{1}{8^2+2^5+4}+2\sqrt[\pi]{0.50448}=\frac{1}{100}+2^{\,-2+2\sum_{k=1}^{\infty}\frac{2^k}{\binom{2k}{k}}\sqrt{0.50448}}$$

$$\frac{1}{8^2+2^5+4}+2\sqrt[\pi]{0.50448}=\frac{1}{100}+2^{\,\sum_{k=0}^{\infty}\frac{2^{-k}(-6+50k)}{\binom{3k}{k}}\sqrt{0.50448}}$$

Integral representations:

$$\frac{1}{8^2+2^5+4}+2\sqrt[\pi]{0.50448}=\frac{1}{100}+2e^{-0.342114\Big/\left(\int_0^{\infty}\frac{1}{1+t^2}\,dt\right)}$$

$$\frac{1}{8^2+2^5+4}+2\sqrt[\pi]{0.50448}=\frac{1}{100}+2e^{-0.171057\Big/\left(\int_0^{1}\sqrt{1-t^2}\,dt\right)}$$

$$\frac{1}{8^2+2^5+4}+2\sqrt[\pi]{0.50448}=\frac{1}{100}+2e^{-0.342114\Big/\left(\int_0^{\infty}\frac{\sin(t)}{t}\,dt\right)}$$

From the last expression (f), we obtain also:

(0.5044896957)-(9.8965751842e-6)-(1.4916789982e-7)+(2.5455515856e-8)-(2.4341661832e-9)-(1/107520(1-0.939757))^8 [-1871+5740 ln((1-0.939757)/4)+29120 ln^2((1-0.939757)/4)+31360 ln^3((1-0.939757)/4)]

Input interpretation:

$$0.5044896957-9.8965751842\times10^{-6}-1.4916789982\times10^{-7}+2.5455515856\times10^{-8}-2.4341661832\times10^{-9}-\left(\frac{1}{107520}(1-0.939757)\right)^8\left(-1871+5740\log\left(\frac{1-0.939757}{4}\right)+29120\log^2\left(\frac{1-0.939757}{4}\right)+31360\log^3\left(\frac{1-0.939757}{4}\right)\right)$$

$\log(x)$ is the natural logarithm

Result:

0.5044796730...

0.5044796730…. as above

[(6e)^0.5/((((0.50448969)-(9.89657e-6)-(1.4916789e-7)+(2.5455515e-8)-(2.4341661e-9)-(1/107520(1-0.939757))^8 [-1871+5740 ln((1-0.939757)/4)+29120 ln^2((1-0.939757)/4)+31360 ln^3((1-0.939757)/4)]))))]^2

Input interpretation:

$$\left(\left(\sqrt{6\,e}\right)\Big/\left(0.50448969 - 9.89657\times 10^{-6} - 1.4916789\times 10^{-7} + 2.5455515\times 10^{-8} - 2.4341661\times 10^{-9} - \left(\frac{1}{107520}(1-0.939757)\right)^8\left(-1871 + 5740\log\left(\frac{1-0.939757}{4}\right) + 29\,120\log^2\left(\frac{1-0.939757}{4}\right) + 31\,360\log^3\left(\frac{1-0.939757}{4}\right)\right)\right)\right)^2$$

$\log(x)$ is the natural logarithm

Result:

64.085297...

64.085297… ≈ 64

[[(6e)^0.5/((((0.50448969)-(9.89657e-6)-(1.4916789e-7)+(2.5455e-8)-(2.43416e-9)-(1/107520(1-0.939757))^8 [-1871+5740 ln((1-0.939757)/4)+29120 ln^2((1-0.939757)/4)+31360 ln^3((1-0.939757)/4)]))]^2]^2-11

Input interpretation:

$$\left(\left(\left(\sqrt{6\,e}\right)\Big/\left(0.50448969 - 9.89657\times 10^{-6} - 1.4916789\times 10^{-7} + 2.5455\times 10^{-8} - 2.43416\times 10^{-9} - \left(\frac{1}{107520}(1-0.939757)\right)^8\left(-1871 + 5740\log\left(\frac{1-0.939757}{4}\right) + 29\,120\log^2\left(\frac{1-0.939757}{4}\right) + 31\,360\log^3\left(\frac{1-0.939757}{4}\right)\right)\right)\right)^2\right)^2 - 11$$

$\log(x)$ is the natural logarithm

Result:

4095.925...

4095.925… ≈ 4096

From:

On Climbing Scalars in String Theory
E. Dudas, N. Kitazawa and A. Sagnotti - arXiv:1009.0874v1 [hep-th] 4 Sep 2010

We have that:

$$V = \frac{c}{8} e^{-2x} + \frac{b}{2} e^{-\frac{4x}{3} - b e^{\frac{2x}{3}}} \left[(Re\ a\overline{W_0}) \cos\frac{2by}{3} + (Im\ a\overline{W_0}) \sin\frac{2by}{3} + \frac{|a|^2}{3} \left(3 + b\, e^{\frac{2x}{3}}\right) e^{-b\, e^{\frac{2x}{3}}} \right] .$$

For:

$$\gamma \geq \frac{\sqrt{10} - 1}{3} \approx 0.72 ,$$

$$c = \frac{\gamma}{\sqrt{1 - \gamma^2}}$$

0.7207592 / sqrt(1-0.7207592^2)

$$\frac{0.7207592}{\sqrt{1 - 0.7207592^2}}$$

c = 1.039778

$$a = (D - 1)\, A$$

$$\gamma > 1 \text{ for } D \leq 4 \text{ and } \gamma < 1 \text{ for } D \geq 5$$

a = 4A for A = 1 a = 4

We put:

by = 2π ; b = 2

$$e^{-2x} = e^{-\pi\sqrt{22}}$$

$$e^{-\frac{4x}{3}-b\ e^{\frac{2x}{3}}} = 4372e^{-\pi\sqrt{37}} \qquad e^{-b\ e^{\frac{2x}{3}}} = 4372e^{-\pi\sqrt{22}}$$

$$W = W_0 + a\ e^{-bT} \qquad W_0 = 1\text{-}4 * e^{-\pi\sqrt{37}} \quad \text{or} \quad W_0 = 1\text{-}4i * e^{-\pi\sqrt{37}}$$

$$e^{\frac{2x}{3}} = e^{\frac{1}{8}\pi\sqrt{18}}$$

Thence, from:

$$V = \frac{c}{8}\ e^{-2x} + \frac{b}{2}\ e^{-\frac{4x}{3}-b\ e^{\frac{2x}{3}}}\left[(Re\ a\overline{W_0})\cos\frac{2by}{3} + (Im\ a\overline{W_0})\sin\frac{2by}{3} + \frac{|a|^2}{3}\left(3+b\ e^{\frac{2x}{3}}\right)\ e^{-b\ e^{\frac{2x}{3}}}\right].$$

We obtain:

1.039778 / 8 * exp(-Pi*sqrt22)+4372*exp(-Pi*sqrt37) *[(1-4*exp(-Pi*sqrt37)) cos ((4Pi)/3) + (1-4i*exp(-Pi*sqrt37)) sin ((4Pi)/3) + 16/3 (3+2*exp(Pi/8*sqrt18)) * 4372*exp(-Pi*sqrt22)]

Input interpretation:

$$\frac{1.039778}{8}\exp\left(-\pi\sqrt{22}\right) + 4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right) + \left(1-4\,i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{4\pi}{3}\right) + \frac{16}{3}\left(3+2\exp\left(\frac{\pi}{8}\sqrt{18}\right)\right)\times 4372\exp\left(-\pi\sqrt{22}\right)\right)$$

i is the imaginary unit

Result:

$-0.00002716590273... + 3.818704487... \times 10^{-13}\ i$

Polar coordinates:

$r = 0.0000271659$ (radius), $\theta = 180.°$ (angle)

0.0000271659

Alternative representations:

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)=4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\cosh\left(\frac{4i\pi}{3}\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)+\right.$$
$$\left.\cos\left(-\frac{5\pi}{6}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\right)+\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)$$

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)=4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\cosh\left(-\frac{4i\pi}{3}\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)+\right.$$
$$\left.\cos\left(-\frac{5\pi}{6}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\right)+\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)$$

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)=4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\cosh\left(-\frac{4i\pi}{3}\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)-\right.$$
$$\left.\cos\left(\frac{11\pi}{6}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\right)+\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)$$

Series representations:

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\ \pi}{8}\right)\right)16\times4372\exp\left(-\pi\sqrt{22}\right)\right)=$$
$$2.03887\times10^{8}\left(6.37473\times10^{-10}\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\right.\right.$$
$$\left.\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$1.5\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$\exp\left(\frac{1}{8}\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(18-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(18-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$0.0000428866\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\right.$$
$$\left.\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=0}^{\infty}(-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right)-0.000171546\,i$$
$$\exp^2\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}(-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right)+0.0000214433$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}\frac{\left(-\frac{16}{9}\right)^k\pi^{2k}}{(2k)!}-0.0000857731$$
$$\exp^2\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\left.\sum_{k=0}^{\infty}\frac{\left(-\frac{16}{9}\right)^k\pi^{2k}}{(2k)!}\right)\ \text{for}\ (x\in\mathbb{R}\ \text{and}\ x<0)$$

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\ \pi}{8}\right)\right)16\times4372\exp\left(-\pi\sqrt{22}\right)\right)=$$
$$2.03887\times10^{8}\left(6.37473\times10^{-10}\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\right.\right.$$
$$\left.\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$1.5\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$\exp\left(\frac{1}{8}\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(18-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(18-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$0.0000214433\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\right.$$
$$\left.\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=0}^{\infty}\frac{\left(-\frac{16}{9}\right)^k\pi^{2k}}{(2k)!}-0.0000857731$$
$$\exp^2\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}\frac{\left(-\frac{16}{9}\right)^k\pi^{2k}}{(2k)!}+0.0000214433$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}\frac{\left(\frac{3}{4}\right)^{-1-2k}e^{i\,k\,\pi}\pi^{1+2k}}{(1+2k)!}-0.0000857731\,i$$
$$\exp^2\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\left.\sum_{k=0}^{\infty}\frac{\left(\frac{3}{4}\right)^{-1-2k}e^{i\,k\,\pi}\pi^{1+2k}}{(1+2k)!}\right)\text{ for }(x\in\mathbb{R}\text{ and }x<0)$$

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times4372\exp\left(-\pi\sqrt{22}\right)\right)=$$
$$2.03887\times10^{8}\left(6.37473\times10^{-10}\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\right.\right.$$
$$\left.\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+0.0000214433\,J_0\left(\frac{4\pi}{3}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$1.5\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$\exp\left(\frac{1}{8}\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(18-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(18-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)-$$
$$0.0000857731\,J_0\left(\frac{4\pi}{3}\right)\exp^2\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\right.$$
$$\left.\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+0.0000428866$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=1}^{\infty}(-1)^k J_{2k}\left(\frac{4\pi}{3}\right)-0.000171546$$
$$\exp^2\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=1}^{\infty}(-1)^k J_{2k}\left(\frac{4\pi}{3}\right)+0.0000428866$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}(-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right)-0.000171546\,i$$
$$\exp^2\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\left.\sum_{k=0}^{\infty}(-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right)\right)\ \text{for}\ (x\in\mathbb{R}\ \text{and}\ x<0)$$

Integral representations:

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times4372\exp\left(-\pi\sqrt{22}\right)\right)=\exp\left(-\pi\sqrt{22}\right)\left(0.129972+\left(3.0583\times10^{8}+2.03887\times10^{8}\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{37}\right)\right)+\frac{\exp\left(-\pi\sqrt{37}\right)\sqrt{\pi}}{\pi\mathcal{A}}\int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma}\frac{e^{-(4\pi^2)/(9s)+s}\left(1457.33\pi+2186\,s+(-5829.33\,i\pi-8744\,s)\exp\left(-\pi\sqrt{37}\right)\right)}{s^{3/2}}\,ds\quad\text{for }\gamma>0$$

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times4372\exp\left(-\pi\sqrt{22}\right)\right)=0.129972\exp\left(-\pi\sqrt{22}\right)+3.0583\times10^{8}\exp\left(-\pi\sqrt{22}\right)\exp\left(-\pi\sqrt{37}\right)+2.03887\times10^{8}\exp\left(\frac{\pi\sqrt{18}}{8}\right)\exp\left(-\pi\sqrt{22}\right)\exp\left(-\pi\sqrt{37}\right)+\int_{\frac{\pi}{2}}^{\frac{4\pi}{3}}-\frac{4372}{5}\exp\left(-\pi\sqrt{37}\right)\left(8\cos\left(-\frac{4}{5}(\pi-2t)\right)\left(-1+4\,i\exp\left(-\pi\sqrt{37}\right)\right)+5\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\sin(t)\right)dt$$

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times4372\exp\left(-\pi\sqrt{22}\right)\right)=0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)+305\,830\,144\exp\left(-\pi\sqrt{22}\right)\exp\left(-\pi\sqrt{37}\right)+\frac{611\,660\,288}{3}\exp\left(\frac{\pi\sqrt{18}}{8}\right)\exp\left(-\pi\sqrt{22}\right)\exp\left(-\pi\sqrt{37}\right)-17\,488\exp^{2}\left(-\pi\sqrt{37}\right)+\int_{0}^{1}-\frac{17\,488}{3}\pi\exp\left(-\pi\sqrt{37}\right)\left(\cos\left(\frac{4\pi t}{3}\right)\left(-1+4\,i\exp\left(-\pi\sqrt{37}\right)\right)+\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{4\pi t}{3}\right)\right)dt$$

Multiple-argument formulas:

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)=0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\left(-1+2\cos^2\left(\frac{2\pi}{3}\right)\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)+2\cos\left(\frac{2\pi}{3}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{2\pi}{3}\right)\right)$$

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)=0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+2\cos\left(\frac{2\pi}{3}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{2\pi}{3}\right)+\left(-1+4\exp\left(-\pi\sqrt{37}\right)\right)\left(-1+2\sin^2\left(\frac{2\pi}{3}\right)\right)\right)$$

$$\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)=0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\left(-1+2\cos^2\left(\frac{2\pi}{3}\right)\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)+\left(-1+4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{4\pi}{9}\right)\left(-3+4\sin^2\left(\frac{4\pi}{9}\right)\right)\right)$$

From which:

1/((((1.039778 / 8 * exp(-Pi*sqrt22)+4372*exp(-Pi*sqrt37) *[(1-4*exp(-Pi*sqrt37)) cos ((4Pi)/3) + (1-4i*exp(-Pi*sqrt37)) sin ((4Pi)/3) + 16/3 (3+2*exp(Pi/8*sqrt18)) * 4372*exp(-Pi*sqrt22)])))

Input interpretation:

$$1 \Big/ \left(\frac{1.039778}{8} \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - 4\, i \exp\left(-\pi \sqrt{37}\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{16}{3}\left(3 + 2 \exp\left(\frac{\pi}{8}\sqrt{18}\right)\right) \times 4372 \exp\left(-\pi \sqrt{22}\right)\right)\right)$$

i is the imaginary unit

Result:

$$-36810.8511\ldots - 0.000517449259\ldots\, i$$

Polar coordinates:

$r = 36\,810.9$ (radius), $\theta = -180.°$ (angle)

36810.9

Alternative representations:

$$1 \Big/ \left(\frac{1}{8} \exp\left(-\pi \sqrt{22}\right) 1.03978 + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i\left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{1}{3}\left(3 + 2 \exp\left(\frac{\sqrt{18}\ \pi}{8}\right)\right) 16 \times 4372 \exp\left(-\pi \sqrt{22}\right)\right)\right) =$$

$$1 \Big/ \left(4372 \exp\left(-\pi \sqrt{37}\right)\left(\frac{69\,952}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) \exp\left(-\pi \sqrt{22}\right) + \cosh\left(\frac{4\, i\, \pi}{3}\right)\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) + \cos\left(-\frac{5\pi}{6}\right)\left(1 - 4\, i \exp\left(-\pi \sqrt{37}\right)\right)\right) + \frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right)\right)$$

$$1\Big/\left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)=1\Big/\left(4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\cosh\left(-\frac{4i\pi}{3}\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)+\cos\left(-\frac{5\pi}{6}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\right)+\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)\right)$$

$$1\Big/\left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)=1\Big/\left(4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\cosh\left(-\frac{4i\pi}{3}\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)-\cos\left(\frac{11\pi}{6}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\right)+\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)\right)$$

Series representations:

$$1 \Big/ \left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978 + 4372\exp\left(-\pi\sqrt{37}\right)\right.$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right) =$$
$$4.90468\times 10^{-9} \Big/ \left(6.37473\times 10^{-10}\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\right.\right.$$
$$\left.\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$1.5\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$\exp\left(\frac{1}{8}\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(18-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(18-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$0.0000428866\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\right.$$
$$\left.\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=0}^{\infty}(-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right)-0.000171546\,i$$
$$\exp^2\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}(-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right)+0.0000214433$$
$$\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}\frac{\left(-\frac{16}{9}\right)^k\pi^{2k}}{(2k)!}-0.0000857731$$
$$\exp^2\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\left.\sum_{k=0}^{\infty}\frac{\left(-\frac{16}{9}\right)^k\pi^{2k}}{(2k)!}\right) \text{ for } (x\in\mathbb{R} \text{ and } x<0)$$

$$1 \Big/ \left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978 + 4372\exp\left(-\pi\sqrt{37}\right)\right.$$
$$\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.\right.$$
$$\left.\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right) =$$
$$4.90468\times 10^{-9} \Big/ \left(6.37473\times 10^{-10}\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\right.\right.$$
$$\left.\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$1.5\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$\exp\left(\frac{1}{8}\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(18-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(18-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+$$
$$0.0000214433\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\right.$$
$$\left.\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=0}^{\infty}\frac{\left(-\frac{16}{9}\right)^k\pi^{2k}}{(2k)!}-0.0000857731$$
$$\exp^2\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}\frac{\left(-\frac{16}{9}\right)^k\pi^{2k}}{(2k)!}+0.0000214433$$
$$\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\sum_{k=0}^{\infty}\frac{\left(\frac{3}{4}\right)^{-1-2k}e^{i\,k\,\pi}\,\pi^{1+2k}}{(1+2k)!}-0.0000857731\,i$$
$$\exp^2\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\left.\sum_{k=0}^{\infty}\frac{\left(\frac{3}{4}\right)^{-1-2k}e^{i\,k\,\pi}\,\pi^{1+2k}}{(1+2k)!}\right) \text{ for } (x\in\mathbb{R} \text{ and } x<0)$$

$$1\Big/\left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)\right)16\times4372\exp\left(-\pi\sqrt{22}\right)\right)=$$

$$4.90468\times10^{-9}\Big/\left(6.37473\times10^{-10}\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+0.0000214433\,J_0\left(\frac{4\pi}{3}\right)\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+1.5\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+\exp\left(\frac{1}{8}\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(18-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(18-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)-0.0000857731\,J_0\left(\frac{4\pi}{3}\right)\exp^2\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+0.0000428866\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=1}^{\infty}(-1)^k J_{2k}\left(\frac{4\pi}{3}\right)-0.000171546\exp^2\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=1}^{\infty}(-1)^k J_{2k}\left(\frac{4\pi}{3}\right)+0.0000428866\exp\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=0}^{\infty}(-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right)-0.000171546\,i\exp^2\left(-\pi\exp\left(\pi\,\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\sum_{k=0}^{\infty}(-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right)\right)\quad\text{for}\ (x\in\mathbb{R}\ \text{and}\ x<0)$$

Integral representations:

$$1\Big/\left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)=$$
$$(4.90468\times 10^{-9}\,\pi\,\mathcal{A})\Big/\left(\pi\,\mathcal{A}\exp\left(-\pi\sqrt{22}\right)\left(6.37473\times 10^{-10}+\left(1.5+\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{37}\right)\right)+\exp\left(-\pi\sqrt{37}\right)\sqrt{\pi}\int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma}\frac{1}{s^{3/2}}e^{-(4\pi^2)/(9s)+s}\left(7.14776\times 10^{-6}\,\pi+0.0000107216\,s+(-0.000028591\,i\,\pi-0.0000428866\,s)\exp\left(-\pi\sqrt{37}\right)\right)ds\right)\quad\text{for}\ \gamma>0$$

$$1\Big/\left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)=$$
$$(4.90468\times 10^{-9}\,\mathcal{A})\Big/\left(6.37473\times 10^{-10}\,\mathcal{A}\exp\left(-\pi\sqrt{22}\right)+1.5\,\mathcal{A}\exp\left(-\pi\sqrt{22}\right)\exp\left(-\pi\sqrt{37}\right)+\mathcal{A}\exp\left(\frac{\pi\sqrt{18}}{8}\right)\exp\left(-\pi\sqrt{22}\right)\exp\left(-\pi\sqrt{37}\right)-0.0000214433\,\mathcal{A}\exp\left(-\pi\sqrt{37}\right)\int_{\frac{\pi}{2}}^{\frac{4\pi}{3}}\sin(t)\,dt+0.0000857731\,\mathcal{A}\exp^2\left(-\pi\sqrt{37}\right)\int_{\frac{\pi}{2}}^{\frac{4\pi}{3}}\sin(t)\,dt+7.14776\times 10^{-6}\exp\left(-\pi\sqrt{37}\right)\sqrt{\pi}\int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma}\frac{e^{-(4\pi^2)/(9s)+s}}{s^{3/2}}ds-0.000028591\,i\exp^2\left(-\pi\sqrt{37}\right)\sqrt{\pi}\int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma}\frac{e^{-(4\pi^2)/(9s)+s}}{s^{3/2}}ds\right)\quad\text{for}\ \gamma>0$$

$$1\Big/\left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\right.$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\ \pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)=$$
$$-\left((0.0000428866\,\pi\,\mathcal{A})\Big/\left(-5.57406\times 10^{-6}\,\pi\,\mathcal{A}\exp\left(-\pi\sqrt{22}\right)-\right.\right.$$
$$13\,116\,\pi\,\mathcal{A}\exp\left(-\pi\sqrt{22}\right)\exp\left(-\pi\sqrt{37}\right)-$$
$$8744\,\pi\,\mathcal{A}\exp\left(\frac{\pi\sqrt{18}}{8}\right)\exp\left(-\pi\sqrt{22}\right)\exp\left(-\pi\sqrt{37}\right)-$$
$$0.25\,\pi^2\,\mathcal{A}\exp\left(-\pi\sqrt{37}\right)\int_0^1\cos\left(\frac{4\pi t}{3}\right)dt+$$
$$i\,\pi^2\,\mathcal{A}\exp^2\left(-\pi\sqrt{37}\right)\int_0^1\cos\left(\frac{4\pi t}{3}\right)dt-$$
$$0.09375\exp\left(-\pi\sqrt{37}\right)\sqrt{\pi}\int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma}\frac{e^{-(4\pi^2)/(9s)+s}}{\sqrt{s}}ds+$$
$$\left.\left.0.375\exp^2\left(-\pi\sqrt{37}\right)\sqrt{\pi}\int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma}\frac{e^{-(4\pi^2)/(9s)+s}}{\sqrt{s}}ds\right)\right)\ \text{for}\ \gamma>0$$

Multiple-argument formulas:

$$1\Big/\left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\right.$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\left.\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\ \pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)=$$
$$1\Big/\left(0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\right.$$
$$\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\left(-1+2\cos^2\left(\frac{2\pi}{3}\right)\right)\right.$$
$$\left.\left.\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)+2\cos\left(\frac{2\pi}{3}\right)\left(1-4\,i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{2\pi}{3}\right)\right)\right)$$

$$1\Big/\left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)=$$

$$1\Big/\left(0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+2\cos\left(\frac{2\pi}{3}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{2\pi}{3}\right)+\left(-1+4\exp\left(-\pi\sqrt{37}\right)\right)\left(-1+2\sin^2\left(\frac{2\pi}{3}\right)\right)\right)\right)$$

$$1\Big/\left(\frac{1}{8}\exp\left(-\pi\sqrt{22}\right)1.03978+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\sqrt{18}\,\pi}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)=$$

$$1\Big/\left(0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\left(-1+2\cos^2\left(\frac{2\pi}{3}\right)\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)+\left(-1+4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{4\pi}{9}\right)\left(-3+4\sin^2\left(\frac{4\pi}{9}\right)\right)\right)\right)$$

From which:

2*1/((1.039778 / 8 * exp(-Pi*sqrt22)+4372*exp(-Pi*sqrt37) *[(1-4*exp(-Pi*sqrt37)) cos ((4Pi)/3) + (1-4i*exp(-Pi*sqrt37)) sin ((4Pi)/3) + 16/3 (3+2*exp(Pi/8*sqrt18)) * 4372*exp(-Pi*sqrt22)]))+123+7

Input interpretation:

$$2\times 1\Big/\left(\frac{1.039778}{8}\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{16}{3}\left(3+2\exp\left(\frac{\pi}{8}\sqrt{18}\right)\right)\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)+123+7$$

i is the imaginary unit

Result:

$$-73491.7022\ldots - 0.00103489852\ldots\, i$$

Polar coordinates:

$r = 73491.7$ (radius), $\theta = -180.°$ (angle)

73491.7

Alternative representations:

$$2\Big/\left(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)+123+7=130+2\Big/\left(4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\cosh\left(\frac{4i\pi}{3}\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)+\cos\left(-\frac{5\pi}{6}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\right)+\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)\right)$$

$$2\Big/\left(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)+123+7=130+2\Big/\left(4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\cosh\left(-\frac{4i\pi}{3}\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)+\cos\left(-\frac{5\pi}{6}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\right)+\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)\right)$$

$$2 \Big/ \left(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \right.$$
$$\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i\left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) + \right.$$
$$\left. \left. \frac{1}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) 16 \times 4372 \exp\left(-\pi \sqrt{22}\right) \right) \right) + 123 + 7 =$$
$$130 + 2 \Big/ \left(4372 \exp\left(-\pi \sqrt{37}\right) \left(\frac{69\,952}{3} \left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) \exp\left(-\pi \sqrt{22}\right) + \right. \right.$$
$$\cosh\left(-\frac{4 i \pi}{3}\right)\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) -$$
$$\left. \left. \cos\left(\frac{11\pi}{6}\right)\left(1 - 4 i \exp\left(-\pi \sqrt{37}\right)\right) \right) + \frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) \right)$$

Series representations:

$$2 \Bigg/ \Bigg(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i \left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{1}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) 16 \times 4372 \exp\left(-\pi \sqrt{22}\right) \right) + 123 + 7 = 130 + 9.80937 \times 10^{-9} \Bigg/ \left(\exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(22 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (22 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \left(6.37473 \times 10^{-10} + \left(1.5 + \exp\left(\frac{1}{8} \pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(18 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (18 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \right) \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) + \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \left(\left(0.0000428866 - 0.000171546\, i \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \right) \sum_{k=0}^{\infty} (-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right) + \left(0.0000214433 - 0.0000857731 \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \right) \sum_{k=0}^{\infty} \frac{\left(-\frac{16}{9}\right)^k \pi^{2k}}{(2k)!} \right) \right) \text{ for } (x \in \mathbb{R} \text{ and } x < 0)$$

$$2 \Big/ \left(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \right.$$
$$\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i\left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) + \right.$$
$$\left. \left. \frac{1}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) 16 \times 4372 \exp\left(-\pi \sqrt{22}\right) \right) \right) + 123 + 7 = 130 +$$
$$2 \Big/ \left(0.129972 \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(22 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (22 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) + \right.$$
$$4372 \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right)$$
$$\left(\frac{69\,952}{3} \left(3 + 2 \exp\left(\frac{1}{8} \pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(18 - x)}{2\pi} \right\rfloor \right) \right. \right. \right.$$
$$\left. \left. \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (18 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \right)$$
$$\exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(22 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (22 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) +$$
$$2 \left(1 - 4 i \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \right. \right.$$
$$\left. \left. \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \right) \sum_{k=0}^{\infty} (-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right) +$$
$$\left(1 - 4 \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor \right) \sqrt{x} \right. \right.$$
$$\left. \left. \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \right)$$
$$\left. \sum_{k=0}^{\infty} \frac{(-1)^k \left(\frac{4}{3}\right)^{2k} \pi^{2k}}{(2k)!} \right) \text{ for } (x \in \mathbb{R} \text{ and } x < 0)$$

$$2 \Bigg/ \left(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i\left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{1}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) 16 \times 4372 \exp\left(-\pi \sqrt{22}\right)\right)\right) + 123 + 7 = 130 + 9.80937 \times 10^{-9} \Bigg/ \left(\exp\left(-\pi \exp\left(\pi \mathcal{A}\left\lfloor \frac{\arg(22 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (22 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!}\right) \left(6.37473 \times 10^{-10} + \left(1.5 + \exp\left(\frac{1}{8} \pi \exp\left(\pi \mathcal{A}\left\lfloor \frac{\arg(18 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (18 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!}\right)\right) \exp\left(-\pi \exp\left(\pi \mathcal{A}\left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!}\right) + \exp\left(-\pi \exp\left(\pi \mathcal{A}\left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!}\right) \left(\left(0.0000214433 - 0.0000857731 \exp\left(-\pi \exp\left(\pi \mathcal{A}\left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!}\right)\right) \sum_{k=0}^{\infty} \frac{\left(-\frac{16}{9}\right)^k \pi^{2k}}{(2k)!} + \left(0.0000214433 - 0.0000857731\, i \exp\left(-\pi \exp\left(\pi \mathcal{A}\left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!}\right)\right) \sum_{k=0}^{\infty} \frac{\left(\frac{3}{4}\right)^{-1-2k} e^{i k \pi} \pi^{1+2k}}{(1 + 2k)!}\right)\right) \text{ for } (x \in \mathbb{R} \text{ and } x < 0)$$

Integral representations:

$$2\Big/\left(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)+123+7=130+9.80937\times 10^{-9}\Big/\left(\exp\left(-\pi\sqrt{22}\right)\left(6.37473\times 10^{-10}+\left(1.5+\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{37}\right)\right)+\exp\left(-\pi\sqrt{37}\right)\int_0^1\left(\pi\cos\left(\frac{4\pi t}{3}\right)\left(0.000028591-0.000114364\,i\exp\left(-\pi\sqrt{37}\right)\right)+\pi\left(-0.0000178694+0.0000714776\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{1}{6}\pi(3+5t)\right)\right)dt\right)$$

$$2\Big/\left(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{1}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)16\times 4372\exp\left(-\pi\sqrt{22}\right)\right)+123+7=130+2\Big/\left(0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma}-\frac{e^{-(4\pi^2)/(9s)+s}\left(-2\pi-3s+4(2i\pi+3s)\exp\left(-\pi\sqrt{37}\right)\right)\sqrt{\pi}}{6\pi s^{3/2}\mathcal{A}}ds\right)\right)\text{ for }\gamma>0$$

$$2 \Big/ \left(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \right.$$
$$\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right) \right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i \left(4 \exp\left(-\pi \sqrt{37}\right) \right) \right) \sin\left(\frac{4\pi}{3}\right) + \right.$$
$$\left. \left. \frac{1}{3} \left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8} \right) \right) 16 \times 4372 \exp\left(-\pi \sqrt{22}\right) \right) \right) + 123 + 7 =$$
$$130 + 2 \Big/ \left(0.129972 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \right.$$
$$\left(\frac{69\,952}{3} \left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8} \right) \right) \exp\left(-\pi \sqrt{22}\right) - \right.$$
$$1 - 4 \exp\left(-\pi \sqrt{37}\right) \int_{\frac{\pi}{2}}^{\frac{4\pi}{3}} \sin(t)\, dt +$$
$$\left. \left. \frac{\left(1 - 4\, i \exp\left(-\pi \sqrt{37}\right)\right) \sqrt{\pi}}{3\, \mathcal{A}} \int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma} \frac{e^{-(4\pi^2)/(\mathcal{O}s)+s}}{s^{3/2}}\, ds \right) \right) \text{ for } \gamma > 0$$

Multiple-argument formulas:

$$2 \Big/ \left(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \right.$$
$$\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right) \right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i \left(4 \exp\left(-\pi \sqrt{37}\right) \right) \right) \sin\left(\frac{4\pi}{3}\right) + \right.$$
$$\left. \left. \frac{1}{3} \left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8} \right) \right) 16 \times 4372 \exp\left(-\pi \sqrt{22}\right) \right) \right) + 123 + 7 =$$
$$2 \left(65 + 1 \Big/ \left(0.129972 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \right. \right.$$
$$\left(\frac{69\,952}{3} \left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8} \right) \right) \exp\left(-\pi \sqrt{22}\right) + \right.$$
$$\left(-1 + 2 \cos^2\left(\frac{2\pi}{3}\right) \right) \left(1 - 4 \exp\left(-\pi \sqrt{37}\right) \right) +$$
$$\left. \left. \left. 2 \cos\left(\frac{2\pi}{3}\right) \left(1 - 4\, i \exp\left(-\pi \sqrt{37}\right) \right) \sin\left(\frac{2\pi}{3}\right) \right) \right) \right)$$

$$2 \Big/ \left(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i\left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{1}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) 16 \times 4372 \exp\left(-\pi \sqrt{22}\right)\right)\right) + 123 + 7 = 2\left(65 + 1 \Big/ \left(0.129972 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\frac{69\,952}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) \exp\left(-\pi \sqrt{22}\right) + 2 \cos\left(\frac{2\pi}{3}\right)\left(1 - 4i \exp\left(-\pi \sqrt{37}\right)\right) \sin\left(\frac{2\pi}{3}\right) + \left(-1 + 4 \exp\left(-\pi \sqrt{37}\right)\right)\left(-1 + 2 \sin^2\left(\frac{2\pi}{3}\right)\right)\right)\right)\right)$$

$$2 \Big/ \left(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i\left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{1}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) 16 \times 4372 \exp\left(-\pi \sqrt{22}\right)\right)\right) + 123 + 7 = 2\left(65 + 1 \Big/ \left(0.129972 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\frac{69\,952}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) \exp\left(-\pi \sqrt{22}\right) + \left(-1 + 2 \cos^2\left(\frac{2\pi}{3}\right)\right)\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) + \left(-1 + 4i \exp\left(-\pi \sqrt{37}\right)\right) \sin\left(\frac{4\pi}{9}\right)\left(-3 + 4 \sin^2\left(\frac{4\pi}{9}\right)\right)\right)\right)\right)$$

From:

$$2 \times 1 \Big/ \left(\frac{1.039778}{8} \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - 4i \exp\left(-\pi \sqrt{37}\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{16}{3}\left(3 + 2 \exp\left(\frac{\pi}{8} \sqrt{18}\right)\right) \times 4372 \exp\left(-\pi \sqrt{22}\right)\right)\right) + 123 + 7$$

$= 73491.7$, we obtain the following mathematical connection:

$$\left[2\times 1\Big/\left(\frac{1.039778}{8}\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{16}{3}\left(3+2\exp\left(\frac{\pi}{8}\sqrt{18}\right)\right)\times 4372\exp\left(-\pi\sqrt{22}\right)\right)\right)+123+7\right)\right] = 73491.7 \Rightarrow$$

$$\Rightarrow -3927+2\left(\sqrt[13]{N\exp\left[\int d\hat{\sigma}\left(-\frac{1}{4u^2}\mathrm{P}_i D\mathrm{P}_i\right)\right]|Bp\rangle_{\mathrm{NS}}+\int[d\mathrm{X}^\mu]\exp\left\{\int d\hat{\sigma}\left(-\frac{1}{4v^2}D\mathrm{X}^\mu D^2\mathrm{X}^\mu\right)\right\}|\mathrm{X}^\mu,\mathrm{X}^i=0\rangle_{\mathrm{NS}}}\right)=$$

$$-3927+2\sqrt[13]{2.2983717437\times 10^{59}+2.0823329825883\times 10^{59}}$$

$$= 73490.8437525.... \Rightarrow$$

$$\Rightarrow \left(A(r)\times\frac{1}{B(r)}\left(-\frac{1}{\phi(r)}\right)\times\frac{1}{e^{\Lambda(r)}}\right)\Rightarrow$$

$$\Rightarrow\left(-0.000029211892\times\frac{1}{0.0003644621}\left(-\frac{1}{0.0005946833}\right)\times\frac{1}{0.00183393}\right)=$$

$$= 73491.788325481187105491595720422205480251957265634133987 00...$$

$$= 73491.7883254... \Rightarrow$$

$$\left(I_{21} \ll \int_{-\infty}^{+\infty} \exp\left(-\left(\frac{t}{H}\right)^2\right) \left| \sum_{\lambda \leqslant P^{1-\varepsilon_2}} \frac{a(\lambda)}{\sqrt{\lambda}} B(\lambda) \lambda^{-i(T+t)} \right|^2 dt \ll \right.$$

$$\left. \ll H \left\{ \left(\frac{4}{\varepsilon_2 \log T} \right)^{2r} (\log T)(\log X)^{-2\beta} + (\varepsilon_2^{-2r} (\log T)^{-2r} + \varepsilon_2^{-r} h_1^r (\log T)^{-r}) T^{-\varepsilon_1} \right\} \right) /$$

$$/(26 \times 4)^2 - 24 = \left(\frac{7.9313976505275 \times 10^8}{(26 \times 4)^2 - 24} \right) = 73493.30662\ldots$$

Mathematical connections with the boundary state corresponding to the NSNS-sector of N Dp-branes in the limit of u → ∞, with the ratio concerning the general asymptotically flat solution of the equations of motion of the p-brane and with the Karatsuba's equation concerning the zeros of a special type of function connected with Dirichlet series.

We note that:

1/9(((1/((((1.039778 / 8 * exp(-Pi*sqrt22)+4372*exp(-Pi*sqrt37) [(1-4*exp(-Pi*sqrt37)) cos ((4Pi)/3)+(1-4i*exp(-Pi*sqrt37)) sin ((4Pi)/3)+16/3 (3+2*exp(Pi/8*sqrt18)) 4372*exp(-Pi*sqrt22)])))))))-6

Input interpretation:

$$\frac{1}{9} \times 1 \Big/ \left(\frac{1.039778}{8} \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - 4\,i \exp\left(-\pi \sqrt{37}\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{16}{3} \left(3 + 2 \exp\left(\frac{\pi}{8} \sqrt{18}\right)\right) \left(4372 \exp\left(-\pi \sqrt{22}\right)\right) \right) \right) - 6$$

i is the imaginary unit

Result:

$-4096.09457\ldots -$
$0.0000574943621\ldots\, i$

Polar coordinates:

$r = 4096.09$ (radius), $\theta = -180.°$ (angle)

$4096.09 \approx 4096$

Alternative representations:

$$1 \Big/ \left(\left(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right)\right.\right.$$
$$\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i\left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) +\right.$$
$$\left.\left.\left.\frac{16}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right)\left(4372 \exp\left(-\pi \sqrt{22}\right)\right)\right)\right) 9\Big) - 6 =$$
$$-6 + 1 \Big/ \left(9\left(4372 \exp\left(-\pi \sqrt{37}\right)\left(\frac{69\,952}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) \exp\left(-\pi \sqrt{22}\right) +\right.\right.\right.$$
$$\cosh\left(\frac{4 i \pi}{3}\right)\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) +$$
$$\left.\left.\left.\cos\left(-\frac{5\pi}{6}\right)\left(1 - 4 i \exp\left(-\pi \sqrt{37}\right)\right)\right) + \frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right)\right)\right)$$

$$1 \Big/ \left(\left(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right)\right.\right.$$
$$\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i\left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) +\right.$$
$$\left.\left.\left.\frac{16}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right)\left(4372 \exp\left(-\pi \sqrt{22}\right)\right)\right)\right) 9\Big) - 6 =$$
$$-6 + 1 \Big/ \left(9\left(4372 \exp\left(-\pi \sqrt{37}\right)\left(\frac{69\,952}{3}\left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) \exp\left(-\pi \sqrt{22}\right) +\right.\right.\right.$$
$$\cosh\left(-\frac{4 i \pi}{3}\right)\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) +$$
$$\left.\left.\left.\cos\left(-\frac{5\pi}{6}\right)\left(1 - 4 i \exp\left(-\pi \sqrt{37}\right)\right)\right) + \frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right)\right)\right)$$

$$1\Big/\left(\left(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\right.\right.$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\left.\frac{16}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\right)9\Big)-6=$$
$$-6+1\Big/\left(9\left(4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\right.\right.\right.$$
$$\cosh\left(-\frac{4i\pi}{3}\right)\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)-$$
$$\left.\left.\left.\cos\left(\frac{11\pi}{6}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\right)+\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)\right)\right)$$

Series representations:

$$1 \Big/ \Bigg(\Bigg(\frac{1}{8} \times 1.03978 \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - i \left(4 \exp\left(-\pi \sqrt{37}\right)\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{16}{3} \left(3 + 2 \exp\left(\frac{\pi \sqrt{18}}{8}\right)\right) \right) \left(4372 \exp\left(-\pi \sqrt{22}\right)\right) \right) 9 \Bigg) - 6 =$$

$$-6 + 5.44965 \times 10^{-10} \Big/ \Bigg(\exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(22 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (22 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \left(6.37473 \times 10^{-10} + \left(1.5 + \exp\left(\frac{1}{8} \pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(18 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (18 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \right) \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) + \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \left(\left(0.0000428866 - 0.000171546\, i \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \right) \sum_{k=0}^{\infty} (-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right) + \left(0.0000214433 - 0.0000857731 \exp\left(-\pi \exp\left(\pi \mathcal{A} \left\lfloor \frac{\arg(37 - x)}{2\pi} \right\rfloor\right) \sqrt{x} \sum_{k=0}^{\infty} \frac{(-1)^k (37 - x)^k x^{-k} \left(-\frac{1}{2}\right)_k}{k!} \right) \right) \sum_{k=0}^{\infty} \frac{\left(-\frac{16}{9}\right)^k \pi^{2k}}{(2k)!} \right) \Bigg) \quad \text{for } (x \in \mathbb{R} \text{ and } x < 0)$$

$$1\Big/\Bigg(\Bigg(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{16}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\right)9\Bigg)-6=$$

$$-6+1\Big/\Bigg(9\Bigg(0.129972\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+4372\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\left(\frac{69952}{3}\left(3+2\exp\left(\frac{1}{8}\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(18-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(18-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\right)\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+2\left(1-4i\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\right)\sum_{k=0}^{\infty}(-1)^k J_{1+2k}\left(\frac{4\pi}{3}\right)+\left(1-4\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\right)\sum_{k=0}^{\infty}\frac{(-1)^k\left(\frac{4}{3}\right)^{2k}\pi^{2k}}{(2k)!}\right)\Bigg)\Bigg)\quad\text{for } (x\in\mathbb{R}\text{ and } x<0)$$

$$1\Big/\Bigg(\Bigg(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\right.$$
$$\left.\frac{16}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\right)9\Bigg)-6=$$
$$-6+5.44965\times10^{-10}\Big/\Bigg(\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\right.$$
$$\left.\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\left(6.37473\times10^{-10}+\left(1.5+\exp\left(\frac{1}{8}\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(18-x)}{2\pi}\right\rfloor\right)\right.\right.\right.$$
$$\left.\left.\left.\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(18-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\right)\exp\left(\right.\right.$$
$$\left.\left.-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\right)+$$
$$\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)$$
$$\left(\left(0.0000214433-0.0000857731\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\right.\right.\right.$$
$$\left.\left.\left.\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\right)\sum_{k=0}^{\infty}\frac{\left(-\frac{16}{9}\right)^k\pi^{2k}}{(2k)!}+\right.$$
$$\left.\left(0.0000214433-0.0000857731\,i\exp\left(-\pi\exp\left(\pi\mathcal{A}\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\right.\right.\right.$$
$$\left.\left.\left.\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\right)$$
$$\left.\left.\sum_{k=0}^{\infty}\frac{\left(\frac{3}{4}\right)^{-1-2k}e^{ik\pi}\pi^{1+2k}}{(1+2k)!}\right)\right)\text{ for }(x\in\mathbb{R}\text{ and }x<0)$$

Integral representations:

$$1\Big/\Bigg(\Bigg(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{16}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\right)9\right)-6=-6+5.44965\times10^{-10}\Big/\left(\exp\left(-\pi\sqrt{22}\right)\left(6.37473\times10^{-10}+\left(1.5+\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{37}\right)\right)+\exp\left(-\pi\sqrt{37}\right)\int_0^1\left(\pi\cos\left(\frac{4\pi t}{3}\right)\left(0.000028591-0.000114364\,i\exp\left(-\pi\sqrt{37}\right)\right)+\pi\left(-0.0000178694+0.0000714776\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{1}{6}\pi(3+5t)\right)\right)dt\right)$$

$$1\Big/\Bigg(\Bigg(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{16}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\right)9\right)-6=-6+1\Big/\left(9\left(0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\left(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+\int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma}-\frac{e^{-(4\pi^2)/(9s)+s}\left(-2\pi-3s+4(2i\pi+3s)\exp\left(-\pi\sqrt{37}\right)\right)\sqrt{\pi}}{6\pi s^{3/2}\mathcal{A}}ds\right)\right)\right)\text{ for }\gamma>0$$

$$1\Big/\Bigg(\Bigg(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\Bigg(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+$$
$$\frac{16}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\Bigg)9\Bigg)-6=$$
$$-6+1\Big/\Bigg(9\Bigg(0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\Bigg(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+$$
$$\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\left(1-\frac{4\pi}{3}\int_0^1\sin\left(\frac{4\pi t}{3}\right)dt\right)+$$
$$\frac{\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\sqrt{\pi}}{3\mathcal{A}}\int_{-\mathcal{A}\infty+\gamma}^{\mathcal{A}\infty+\gamma}\frac{e^{-(4\pi^2)/(9s)+s}}{s^{3/2}}\,ds\Bigg)\Bigg)\Bigg)\quad\text{for }\gamma>0$$

Multiple-argument formulas:

$$1\Big/\Bigg(\Bigg(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)$$
$$\Bigg(\left(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+$$
$$\frac{16}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\Bigg)9\Bigg)-6=$$
$$-6+5.44965\times10^{-10}\Big/\Bigg(\exp\left(-\pi\sqrt{22}\right)\Bigg(6.37473\times10^{-10}+$$
$$\left(1.5+\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{37}\right)\Bigg)+$$
$$\exp\left(-\pi\sqrt{37}\right)\Bigg(-0.0000214433+\cos^2\left(\frac{2\pi}{3}\right)\Bigg(0.0000428866-$$
$$0.000171546\exp\left(-\pi\sqrt{37}\right)\Bigg)+0.0000857731\exp\left(-\pi\sqrt{37}\right)+$$
$$\cos\left(\frac{2\pi}{3}\right)\left(0.0000428866-0.000171546\,i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{2\pi}{3}\right)\Bigg)\Bigg)$$

$$1\Big/\Bigg(\Big(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\Big(\Big(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{16}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\Big)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\Big)9\Big)-6=-6+1\Big/\Big(9\Big(0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\Big(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+2\cos\left(\frac{2\pi}{3}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{2\pi}{3}\right)+\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\left(1-2\sin^2\left(\frac{2\pi}{3}\right)\right)\Big)\Big)\Big)$$

$$1\Big/\Bigg(\Big(\frac{1}{8}\times 1.03978\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\Big(\Big(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-i\left(4\exp\left(-\pi\sqrt{37}\right)\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{16}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\Big)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\Big)9\Big)-6=-6+1\Big/\Big(9\Big(0.129972\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\Big(\frac{69\,952}{3}\left(3+2\exp\left(\frac{\pi\sqrt{18}}{8}\right)\right)\exp\left(-\pi\sqrt{22}\right)+2\cos\left(\frac{2\pi}{3}\right)\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{2\pi}{3}\right)+\left(-1+4\exp\left(-\pi\sqrt{37}\right)\right)\left(-1+2\sin^2\left(\frac{2\pi}{3}\right)\right)\Big)\Big)\Big)$$

Performing the 21th and 22th roots, we obtain also:

[1/((((1.039778 / 8 * exp(-Pi*sqrt22)+4372*exp(-Pi*sqrt37) [(1-4*exp(-Pi*sqrt37)) cos ((4Pi)/3)+(1-4i*exp(-Pi*sqrt37)) sin ((4Pi)/3)+16/3 (3+2*exp(Pi/8*sqrt18)) 4372*exp(-Pi*sqrt22)])))-6]^1/21

Input interpretation:

$$\left(1\Big/\Big(\frac{1.039778}{8}\exp\left(-\pi\sqrt{22}\right)+4372\exp\left(-\pi\sqrt{37}\right)\Big(\Big(\left(1-4\exp\left(-\pi\sqrt{37}\right)\right)\cos\left(\frac{4\pi}{3}\right)+\left(1-4i\exp\left(-\pi\sqrt{37}\right)\right)\sin\left(\frac{4\pi}{3}\right)+\frac{16}{3}\left(3+2\exp\left(\frac{\pi}{8}\sqrt{18}\right)\right)\Big)\left(4372\exp\left(-\pi\sqrt{22}\right)\right)\Big)-6\right)\text{^}\,(1/21)$$

i is the imaginary unit

Result:

1.6313711934... –
0.24588964268... i

Polar coordinates:

$r = 1.6498$ (radius), $\theta = -8.57143°$ (angle)

$1.6498 \approx \zeta(2) = \frac{\pi^2}{6} = 1.644934 \ldots$

[1/((((1.039778 / 8 * exp(-Pi*sqrt22)+4372*exp(-Pi*sqrt37) [(1-4*exp(-Pi*sqrt37)) cos ((4Pi)/3)+(1-4i*exp(-Pi*sqrt37)) sin ((4Pi)/3)+16/3 (3+2*exp(Pi/8*sqrt18)) 4372*exp(-Pi*sqrt22)])))-6]^1/22

Input interpretation:

$$\left(1 \Big/ \left(\frac{1.039778}{8} \exp\left(-\pi \sqrt{22}\right) + 4372 \exp\left(-\pi \sqrt{37}\right) \left(\left(1 - 4 \exp\left(-\pi \sqrt{37}\right)\right) \cos\left(\frac{4\pi}{3}\right) + \left(1 - 4\, i \exp\left(-\pi \sqrt{37}\right)\right) \sin\left(\frac{4\pi}{3}\right) + \frac{16}{3}\left(3 + 2 \exp\left(\frac{\pi}{8}\sqrt{18}\right)\right)\left(4372 \exp\left(-\pi \sqrt{22}\right)\right)\right)\right) - 6\right)\text{^}(1/22)$$

i is the imaginary unit

Result:

1.5962629444... –
0.22950796187... i

Polar coordinates:

$r = 1.61268$ (radius), $\theta = -8.18182°$ (angle)

1.61268 result that is a good approximation to the value of the golden ratio 1.618033988749...

Now, we have that:

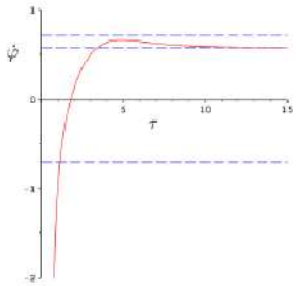


Figure 3: Climbing and inflation for the one–field system with the potential (2.21). Inflation occurs within the strip $|\dot{\varphi}| < 1/\sqrt{2}$, while the lower horizontal line in the upper portion of the plot is the attractor determined by the D3-brane potential, $\dot{\varphi} = 1/\sqrt{3}$.

is *positive*. In an expanding Universe, the acceleration can be quantified via the corresponding number $\mathcal{N}$ of e–folds, where

$$\frac{d\mathcal{N}}{dt} = \frac{1}{\frac{dA}{dt}}\,\mathcal{I} = \frac{d}{dt}\left[\log\left(\frac{dA}{dt}\right) + A - B\right] . \tag{4.2}$$

For the one–scalar system of Section 2, one can thus see that an accelerated phase is possible if

$$|\dot{\varphi}| < \frac{1}{\sqrt{D-2}} , \tag{4.3}$$

and for instance for the Lucchin–Matarrese attractor this is the case only if

$$\gamma < \frac{1}{\sqrt{D-1}} , \tag{4.4}$$

which lies well below $\gamma = 1$, the "critical" logarithmic slope for the climbing phenomenon. In a similar fashion, one can show that in the two–field KKLT system the condition for an accelerated expansion is simply, in the notation of Section 3,

$$r < \frac{1}{\sqrt{2}} , \tag{4.5}$$

which is not fulfilled during the final descent for $\gamma = 1$. As we have anticipated, however, the combined effects of the D9–brane tadpole of [6] and of the non–BPS D3–brane tadpole of [10] can lead to a climbing phase that is eventually followed by steady–state inflation, since the first term of eq. (2.21) forces the scalar field to climb up when emerging from the Big Bang while the second dominates the eventual descent where it can indeed support slow–roll inflation. Fig. 3 displays a numerical solution of this type.

For D = 4, we obtain:

1/(sqrt(4-2)) * 1/(sqrt(4-1)) * 1/(sqrt2)

Input:

$$\frac{1}{\sqrt{4-2}} \times \frac{1}{\sqrt{4-1}} \times \frac{1}{\sqrt{2}}$$

Result:

$$\frac{1}{2\sqrt{3}}$$

Decimal approximation:

0.288675134594812882254574390250978727823800875635063438009...

0.2886751345…

Alternate form:

$$\frac{\sqrt{3}}{6}$$

1/2*1/(((1/(sqrt(4-2)) * 1/(sqrt(4-1)) * 1/(sqrt2))))

1/2*1/(((1/(sqrt2)) * 1/(sqrt3)) * 1/(sqrt2))

Input:

$$\frac{1}{2} \times \frac{1}{\left(\frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{3}}\right) \times \frac{1}{\sqrt{2}}}$$

Result:

$$\sqrt{3}$$

Decimal approximation:

1.732050807568877293527446341505872366942805253810380628055...

1.7320508…. = √3 that is the ratio between the gravitating mass M_0 and the Wheelerian mass q

$$M_0 = \sqrt{3q^2 - \Sigma^2},$$

$$q = \frac{(3\sqrt{3})\, M_s}{2}.$$

(see: Can massless wormholes mimic a Schwarzschild black hole in the strong field lensing? - arXiv:1909.13052v1 [gr-qc] 28 Sep 2019)

We obtain also:

1+1/2(1/sqrt2)*1/(1/sqrt3)

Input:

$$1 + \frac{1}{2} \times \frac{1}{\sqrt{2}} \times \frac{1}{\frac{1}{\sqrt{3}}}$$

Result:

$$1 + \frac{\sqrt{\frac{3}{2}}}{2}$$

Decimal approximation:

1.612372435695794524549321018676472847991486870164167532108...

1.61237243…. result that is a good approximation to the value of the golden ratio 1.618033988749...

Alternate forms:

$$\frac{1}{4}\left(4 + \sqrt{6}\right)$$

$$\frac{1}{2}\left(2 + \sqrt{\frac{3}{2}}\right)$$

$$\frac{\sqrt{6}}{4} + 1$$

Minimal polynomial:

$$8x^2 - 16x + 5$$

Now, from

Charged and Uncharged D-branes in various String Theories
E. Dudas , J. Mourad and A. Sagnotti - arXiv:hep-th/0107081v3 24 Oct 2001

We have:

Since the non-BPS D3 and D7 branes have chiral spectra, it is instructive to verify how the resulting anomalies cancel. The potentially anomalous groups are the SO$(1,p)$ Lorentz group relative to the world-volume of the branes, the transverse SO$(9-p)$ rotation group, the ten-dimensional SO(32) gauge group and, finally, the U(d) gauge group for the brane stack [37]. The anomaly polynomials are the 6 and 10-form contributions to

$$\hat{A}(R)\,[\hat{A}(N)]^{-1}\,\Big[\,\frac{1}{2}(ch_+(N)-ch_-(N))\;tr_{ad}e^{iG} + \;ch_-(N)\;tr_S e^{iG}\;-\;ch_+(N)\;tr_A e^{iG}\;-\;tre^{iF}\;tre^{iG}\Big]\,, \tag{4.8}$$

where R, N, G and F are curvature forms for the SO$(1,9)$, SO$(9-p)$, U(d) and SO(32) gauge groups. An explicit calculation reveals that all irreducible anomalies indeed cancel in (4.8), while the residual anomaly polynomials are

$$I_6 \;=\; Y_2\,X_4\,, \tag{4.9}$$

$$I_{10} \;=\; Y_2\,X_8 + Y_6\,X_4 - 2\,N\,Y_2\,Y_6\,. \tag{4.10}$$

Here

$$Y_2 = -i\, trG\ , \qquad Y_6 = \frac{i}{6}\, trG^3 + i\, trG\, \frac{p_1(R)}{48} - \frac{i}{24} trG\ N^2\ , \tag{4.11}$$

$$\begin{aligned} X_4 &= -p_1(R) - \frac{1}{2} trF^2\ , \\ X_8 &= \frac{trF^4}{24} + \frac{p_1(R)\, trF^2}{96} + \frac{3p_1(R)^2 - 4p_2(R)}{192} \end{aligned} \tag{4.12}$$

factorize the ten dimensional anomaly polynomial as $I_{12} = X_4\ X_8$, and

$$p_1(R) = -\frac{1}{2} trR^2\ , \qquad p_2(R) = \frac{1}{8}\left[(trR^2)^2 - 2\, trR^4\right]\ . \tag{4.13}$$

It should be appreciated that the adjoint fermions play a crucial role in canceling the irreducible part of the anomaly due to the curvature of the normal bundle. The residual anomaly polynomials in (4.10) can then be canceled by the Wess-Zumino terms

$$\begin{aligned} S_{WZ}(D_3) &= T_1 \int_{D_3} Y_2\ B_2\ , \\ S_{WZ}(D7) &- T_5 \int_{D_7} Y_2\ B_6 + T_1 \int_{D_7} Y_6\ B_2 \end{aligned} \tag{4.14}$$

in the effective actions for the D-branes. In verifying the cancellation one needs to use the

From:

$$I_6 = Y_2\ X_4 \qquad I_{10} = Y_2\ X_8 + Y_6\ X_4 - 2\, N\ Y_2\ Y_6$$

$$Y_2 = -i\, trG\ , \qquad Y_6 = \frac{i}{6} trG^3 + i\, trG\, \frac{p_1(R)}{48} - \frac{i}{24} trG\ N^2$$

$$\begin{aligned} X_4 &= -p_1(R) - \frac{1}{2} trF^2\ , \\ X_8 &= \frac{trF^4}{24} + \frac{p_1(R)\, trF^2}{96} + \frac{3p_1(R)^2 - 4p_2(R)}{192} \end{aligned}$$

$-i\, trG$

$$-p_1(R) - \frac{1}{2} trF^2$$

$$p_1(R) = -\frac{1}{2} tr R^2 \ , \qquad p_2(R) = \frac{1}{8} [(tr R^2)^2 - 2\, tr R^4]$$

-i * tr G(1/2 * R^2-1/2 * F^2) for G = 2, R = 3 and F = 5, we obtain:

-i * 2(1/2 * 3^2-1/2 * 5^2)

Input:

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

i is the imaginary unit

Result:

$16\, i$

Polar coordinates:

$r = 16$ (radius), $\theta = 90°$ (angle)

$16 = I_6$

Now:

$$Y_2 = -i\ trG \ , \qquad Y_6 = \frac{i}{6} trG^3 + i\ trG \frac{p_1(R)}{48} - \frac{i}{24} trG\ N^2$$

$$p_1(R) = -\frac{1}{2} tr R^2 \ , \qquad p_2(R) = \frac{1}{8} [(tr R^2)^2 - 2\, tr R^4]$$

$$X_4 = -p_1(R) - \frac{1}{2} tr F^2 \ ,$$

$$X_8 = \frac{tr F^4}{24} + \frac{p_1(R)\ tr F^2}{96} + \frac{3p_1(R)^2 - 4p_2(R)}{192}$$

$$I_{10} = Y_2\ X_8 + Y_6\ X_4 - 2\, N\ Y_2\ Y_6$$

For G = 2, R = 3 and F = 5, N = 8, we obtain:

[-i * 2 *(5^4/24-(9/2*25)/96+((3*81/4-4*(1/8*81-2*81))/192)] + [i/6*8+i*2*1/48*(-9/2)-(i*2*8^2)/24*(9/2-25/2)]-[2*8*(-i*2)*(i/6*8+i*2*1/48*(-9/2)-(i*2*8^2)/24)]

Input:

$$\left(-i\left(2\left(\frac{1}{96}\left(\frac{5^4}{24}-\frac{9}{2}\times 25\right)\right)\right)+\frac{1}{192}\left(3\times\frac{81}{4}-4\left(\frac{1}{8}\times 81-2\times 81\right)\right)\right)+$$
$$\left(\frac{i}{6}\times 8+i\times 2\times\frac{1}{48}\left(-\frac{9}{2}\right)-\left(\frac{1}{24}\left(i\times 2\times 8^2\right)\right)\left(\frac{9}{2}-\frac{25}{2}\right)\right)-$$
$$2\times 8\,(-i\times 2)\left(\frac{i}{6}\times 8+i\times 2\times\frac{1}{48}\left(-\frac{9}{2}\right)-\frac{1}{24}\left(i\times 2\times 8^2\right)\right)$$

i is the imaginary unit

Result:

$$\frac{35\,195}{256}+\frac{52\,547\,i}{1152}$$

Decimal approximation:

137.48046875 +
45.6137152777777777777777777777777777777777777777777777777777... i

Polar coordinates:

$r \approx 144.85$ (radius), $\theta \approx 18.355°$ (angle)

$144.85 = I_{10}$

Minimal polynomial:

$5\,308\,416\,x^2 - 1\,459\,607\,040\,x + 111\,378\,478\,861$

Now, we have that:

> Another noteworthy option, a potential that is the sum of two exponentials, one steep enough to induce the climbing and another flat enough to support a slow–roll inflationary phase, is also available in the setup of [6]. In fact, the ten–dimensional Sugimoto model admits a *stable* non–BPS D3 brane [19], in whose presence the complete four–dimensional potential,
>
> $$V = 2\alpha_1\, e^{-\sqrt{3}\Phi_t} + \alpha_2\, e^{-\frac{3\Phi_s}{2}-\frac{\sqrt{3}\Phi_t}{2}}, \qquad (2.21)$$
>
> becomes precisely of this type if Φ_s is somehow stabilized.

For

$\alpha_1 = 16$, $\alpha_2 = 144$,

$$e^{-\sqrt{3}\Phi_t} = 4372e^{-\pi\sqrt{22}}\ ; \qquad e^{-\frac{3\Phi_s}{2}-\frac{\sqrt{3}\Phi_t}{2}} = 4372e^{-\pi\sqrt{37}}$$

We obtain:

$$V = 2\alpha_1 e^{-\sqrt{3}\Phi_t} + \alpha_2 e^{-\frac{3\Phi_s}{2}-\frac{\sqrt{3}\Phi_t}{2}},$$

2*16*4372(exp(-Pi*sqrt22)) + 144 * 4372(exp(-Pi*sqrt37))

Input:

$$2\times 16\times 4372\exp\left(-\pi\sqrt{22}\right)+144\times 4372\exp\left(-\pi\sqrt{37}\right)$$

Exact result:

$$139\,904\,e^{-\sqrt{22}\,\pi}+629\,568\,e^{-\sqrt{37}\,\pi}$$

Decimal approximation:

0.058923224610175378528365222043472888384535252493064669113...

0.05892322…

Alternate forms:

$$69\,952\left(2\,e^{-\sqrt{22}\,\pi}+9\,e^{-\sqrt{37}\,\pi}\right)$$

$$69\,952\,e^{-\sqrt{22}\,\pi-\sqrt{37}\,\pi}\left(9\,e^{\sqrt{22}\,\pi}+2\,e^{\sqrt{37}\,\pi}\right)$$

Series representations:

$$2\times 16\times 4372\exp\left(-\pi\sqrt{22}\right)+144\times 4372\exp\left(-\pi\sqrt{37}\right)=$$
$$69\,952\left(2\exp\left(-\pi\sqrt{21}\sum_{k=0}^{\infty}21^{-k}\binom{\frac{1}{2}}{k}\right)+9\exp\left(-\pi\sqrt{36}\sum_{k=0}^{\infty}36^{-k}\binom{\frac{1}{2}}{k}\right)\right)$$

$$2\times 16\times 4372\exp\left(-\pi\sqrt{22}\right)+144\times 4372\exp\left(-\pi\sqrt{37}\right)=$$
$$69\,952\left(2\exp\left(-\pi\sqrt{21}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{21}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)+9\exp\left(-\pi\sqrt{36}\sum_{k=0}^{\infty}\frac{\left(-\frac{1}{36}\right)^k\left(-\frac{1}{2}\right)_k}{k!}\right)\right)$$

$$2 \times 16 \times 4372 \exp\left(-\pi \sqrt{22}\right) + 144 \times 4372 \exp\left(-\pi \sqrt{37}\right) = 69\,952 \left(2 \exp\left(-\pi \sqrt{z_0} \sum_{k=0}^{\infty} \frac{(-1)^k \left(-\frac{1}{2}\right)_k (22 - z_0)^k z_0^{-k}}{k!}\right) + 9 \exp\left(-\pi \sqrt{z_0} \sum_{k=0}^{\infty} \frac{(-1)^k \left(-\frac{1}{2}\right)_k (37 - z_0)^k z_0^{-k}}{k!}\right)\right)$$

for $(\text{not } (z_0 \in \mathbb{R} \text{ and } -\infty < z_0 \leq 0))$

We note that

$$4372e^{-\pi\sqrt{22}} \; ; \qquad 4372e^{-\pi\sqrt{37}}$$

are two values concerning a chapter of the fundamental Ramanujan paper “Modular equations and approximations to π”. Also the results 64 and 4096 are numbers inherent the same work. (see Observations)

From which:

(8*sqrt2)/3*1/((((2*16*4372(exp(-Pi*sqrt22)) + 144 * 4372(exp(-Pi*sqrt37))))))

Input:

$$\left(\frac{1}{3}\left(8\sqrt{2}\right)\right) \times \frac{1}{2 \times 16 \times 4372 \exp\left(-\pi \sqrt{22}\right) + 144 \times 4372 \exp\left(-\pi \sqrt{37}\right)}$$

Exact result:

$$\frac{8\sqrt{2}}{3\left(139\,904\, e^{-\sqrt{22}\,\pi} + 629\,568\, e^{-\sqrt{37}\,\pi}\right)}$$

Decimal approximation:

64.00254214323842979880078343569974095076537244870444230131...

64.00254214… ≈ 64

Alternate forms:

$$\frac{1}{13\,116\sqrt{2}\left(2e^{-\sqrt{22}\,\pi}+9e^{-\sqrt{37}\,\pi}\right)}$$

$$\frac{e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}}{13\,116\sqrt{2}\left(9e^{\sqrt{22}\,\pi}+2e^{\sqrt{37}\,\pi}\right)}$$

$$\frac{e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\sqrt{2}}{26\,232\left(9e^{\sqrt{22}\,\pi}+2e^{\sqrt{37}\,\pi}\right)}$$

Series representations:

$$\frac{8\sqrt{2}}{(2\times 16\times 4372\exp(-\pi\sqrt{22})+144\times 4372\exp(-\pi\sqrt{37}))\,3}=$$
$$\left(\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k z_0^{-k}}{k!}\right)\Big/$$
$$\left(26\,232\left(2\exp\left(-\pi\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(22-z_0)^k z_0^{-k}}{k!}\right)+\right.\right.$$
$$\left.\left.9\exp\left(-\pi\sqrt{z_0}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(37-z_0)^k z_0^{-k}}{k!}\right)\right)\right)$$
for $(\text{not}\ (z_0\in\mathbb{R}\ \text{and}\ -\infty<z_0\le 0))$

$$\frac{8\sqrt{2}}{(2\times 16\times 4372\exp(-\pi\sqrt{22})+144\times 4372\exp(-\pi\sqrt{37}))\,3}=$$
$$\left(\exp\left(i\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\Big/$$
$$\left(26\,232\left(2\exp\left(-\pi\exp\left(i\pi\left\lfloor\frac{\arg(22-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(22-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)+\right.\right.$$
$$\left.\left.9\exp\left(-\pi\exp\left(i\pi\left\lfloor\frac{\arg(37-x)}{2\pi}\right\rfloor\right)\sqrt{x}\sum_{k=0}^{\infty}\frac{(-1)^k(37-x)^k x^{-k}\left(-\frac{1}{2}\right)_k}{k!}\right)\right)\right)$$
for $(x\in\mathbb{R}\ \text{and}\ x<0)$

$$\frac{8\sqrt{2}}{(2\times 16\times 4372\exp(-\pi\sqrt{22})+144\times 4372\exp(-\pi\sqrt{37}))\,3}=$$
$$\left(\left(\frac{1}{z_0}\right)^{1/2\,[\arg(2-z_0)/(2\pi)]}\,z_0^{1/2+1/2\,[\arg(2-z_0)/(2\pi)]}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(2-z_0)^k\,z_0^{-k}}{k!}\right)\Big/$$
$$\left(26\,232\left(2\exp\left(-\pi\left(\frac{1}{z_0}\right)^{1/2\,[\arg(22-z_0)/(2\pi)]}\,z_0^{1/2\,(1+[\arg(22-z_0)/(2\pi)])}\right.\right.\right.$$
$$\left.\left.\left.\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(22-z_0)^k\,z_0^{-k}}{k!}\right)+9\exp\left(-\pi\left(\frac{1}{z_0}\right)^{1/2\,[\arg(37-z_0)/(2\pi)]}\right.\right.\right.$$
$$\left.\left.\left.z_0^{1/2\,(1+[\arg(37-z_0)/(2\pi)])}\sum_{k=0}^{\infty}\frac{(-1)^k\left(-\frac{1}{2}\right)_k(37-z_0)^k\,z_0^{-k}}{k!}\right)\right)\right)$$

From which:

2*[(8*sqrt2)/3*1/((((2*16*4372(exp(-Pi*sqrt22)) + 144 * 4372(exp(-Pi*sqrt37))))))]^2-log base 3 (2)

Input:

$$2\left(\left(\frac{1}{3}\left(8\sqrt{2}\right)\right)\times\frac{1}{2\times 16\times 4372\exp(-\pi\sqrt{22})+144\times 4372\exp(-\pi\sqrt{37})}\right)^2-\log_3(2)$$

$\log_b(x)$ is the base-b logarithm

Exact result:

$$\frac{256}{9\left(139\,904\,e^{-\sqrt{22}\,\pi}+629\,568\,e^{-\sqrt{37}\,\pi}\right)^2}-\frac{\log(2)}{\log(3)}$$

$\log(x)$ is the natural logarithm

Decimal approximation:

8192.019871840451060444590781242725606868420016489012241230...

8192.01987184…. ≈ 8192 = 2*64^2

Alternate forms:

$$\frac{1}{172\,029\,456\left(2\,e^{-\sqrt{22}\,\pi}+9\,e^{-\sqrt{37}\,\pi}\right)^2}-\frac{\log(2)}{\log(3)}$$

$$-\left(\left(688\,117\,824\,e^{-2\sqrt{22}\,\pi}\log(2)+13\,934\,385\,936\,e^{-2\sqrt{37}\,\pi}\log(2)+6\,193\,060\,416\,e^{\left(-\sqrt{22}-\sqrt{37}\right)\pi}\log(2)-\log(3)\right)\Big/\left(172\,029\,456\left(2e^{-\sqrt{22}\,\pi}+9e^{-\sqrt{37}\,\pi}\right)^2\log(3)\right)\right)$$

$$\frac{9e^{4\sqrt{22}\,\pi}}{76\,457\,536\left(9e^{\sqrt{22}\,\pi}+2e^{\sqrt{37}\,\pi}\right)^2}-\frac{e^{3\sqrt{22}\,\pi}}{38\,228\,768\left(9e^{\sqrt{22}\,\pi}+2e^{\sqrt{37}\,\pi}\right)}+\frac{e^{2\sqrt{22}\,\pi}\log(3)-688\,117\,824\log(2)}{688\,117\,824\log(3)}$$

Alternative representation:

$$2\left(\frac{8\sqrt{2}}{(2\times16\times4372\exp(-\pi\sqrt{22})+144\times4372\exp(-\pi\sqrt{37}))\,3}\right)^2-\log_3(2)=-\frac{\log(2)}{\log(3)}+2\left(\frac{8\sqrt{2}}{3\,(139\,904\exp(-\pi\sqrt{22})+629\,568\exp(-\pi\sqrt{37}))}\right)^2$$

Series representations:

$$2\left(\frac{8\sqrt{2}}{(2\times16\times4372\exp(-\pi\sqrt{22})+144\times4372\exp(-\pi\sqrt{37}))\,3}\right)^2-\log_3(2)=\left(-27\,868\,771\,872\,e^{2\sqrt{22}\,\pi}\,\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor-1\,376\,235\,648\,e^{2\sqrt{37}\,\pi}\,\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor-12\,386\,120\,832\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\,\pi\left\lfloor\frac{\arg(2-x)}{2\pi}\right\rfloor+2\,e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\,\pi\left\lfloor\frac{\arg(3-x)}{2\pi}\right\rfloor+13\,934\,385\,936\,i\,e^{2\sqrt{22}\,\pi}\log(x)+688\,117\,824\,i\,e^{2\sqrt{37}\,\pi}\log(x)+6\,193\,060\,416\,i\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\log(x)-i\,e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\log(x)-13\,934\,385\,936\,i\,e^{2\sqrt{22}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}}{k}-688\,117\,824\,i\,e^{2\sqrt{37}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}}{k}-6\,193\,060\,416\,i\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(2-x)^k x^{-k}}{k}+i\,e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(3-x)^k x^{-k}}{k}\right)\Big/\left(172\,029\,456\left(9e^{\sqrt{22}\,\pi}+2e^{\sqrt{37}\,\pi}\right)^2\left(2\pi\left\lfloor\frac{\arg(3-x)}{2\pi}\right\rfloor-i\log(x)+i\sum_{k=1}^{\infty}\frac{(-1)^k(3-x)^k x^{-k}}{k}\right)\right)\quad\text{for } x<0$$

$$2\left(\frac{8\sqrt{2}}{(2\times 16\times 4372\exp(-\pi\sqrt{22})+144\times 4372\exp(-\pi\sqrt{37}))\,3}\right)^2-\log_3(2)=$$

$$\left(-27\,868\,771\,872\,e^{2\sqrt{22}\,\pi}\,\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor-\right.$$

$$1\,376\,235\,648\,e^{2\sqrt{37}\,\pi}\,\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor-$$

$$12\,386\,120\,832\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\,\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+$$

$$2\,e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\,\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor+13\,934\,385\,936\,i\,e^{2\sqrt{22}\,\pi}\log(z_0)+$$

$$688\,117\,824\,i\,e^{2\sqrt{37}\,\pi}\log(z_0)+6\,193\,060\,416\,i\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\log(z_0)-$$

$$i\,e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\log(z_0)-13\,934\,385\,936\,i\,e^{2\sqrt{22}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(2-z_0)^k z_0^{-k}}{k}-$$

$$688\,117\,824\,i\,e^{2\sqrt{37}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(2-z_0)^k z_0^{-k}}{k}-$$

$$6\,193\,060\,416\,i\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(2-z_0)^k z_0^{-k}}{k}+$$

$$\left.i\,e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(3-z_0)^k z_0^{-k}}{k}\right)\Bigg/\left(172\,029\,456\left(9\,e^{\sqrt{22}\,\pi}+2\,e^{\sqrt{37}\,\pi}\right)^2\right.$$

$$\left.\left(2\pi\left\lfloor\frac{\pi-\arg\left(\frac{1}{z_0}\right)-\arg(z_0)}{2\pi}\right\rfloor-i\log(z_0)+i\sum_{k=1}^{\infty}\frac{(-1)^k(3-z_0)^k z_0^{-k}}{k}\right)\right)$$

$$2\left(\frac{8\sqrt{2}}{(2\times 16\times 4372\exp(-\pi\sqrt{22})+144\times 4372\exp(-\pi\sqrt{37}))\,3}\right)^2-\log_3(2)=$$
$$\left(-13\,934\,385\,936\,e^{2\sqrt{22}\,\pi}\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-688\,117\,824\,e^{2\sqrt{37}\,\pi}\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor\right.$$
$$\log\left(\frac{1}{z_0}\right)-6\,193\,060\,416\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)+$$
$$e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\left\lfloor\frac{\arg(3-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)-13\,934\,385\,936\,e^{2\sqrt{22}\,\pi}\log(z_0)-$$
$$688\,117\,824\,e^{2\sqrt{37}\,\pi}\log(z_0)-6\,193\,060\,416\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\log(z_0)+$$
$$e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\log(z_0)-13\,934\,385\,936\,e^{2\sqrt{22}\,\pi}\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor\log(z_0)-$$
$$688\,117\,824\,e^{2\sqrt{37}\,\pi}\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor\log(z_0)-$$
$$6\,193\,060\,416\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\left\lfloor\frac{\arg(2-z_0)}{2\pi}\right\rfloor\log(z_0)+$$
$$e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\left\lfloor\frac{\arg(3-z_0)}{2\pi}\right\rfloor\log(z_0)+13\,934\,385\,936\,e^{2\sqrt{22}\,\pi}$$
$$\sum_{k=1}^{\infty}\frac{(-1)^k(2-z_0)^k z_0^{-k}}{k}+688\,117\,824\,e^{2\sqrt{37}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(2-z_0)^k z_0^{-k}}{k}+$$
$$6\,193\,060\,416\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(2-z_0)^k z_0^{-k}}{k}-$$
$$\left.e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\sum_{k=1}^{\infty}\frac{(-1)^k(3-z_0)^k z_0^{-k}}{k}\right)\Big/\left(172\,029\,456\left(9\,e^{\sqrt{22}\,\pi}+2\,e^{\sqrt{37}\,\pi}\right)^2\right.$$
$$\left.\left(\left\lfloor\frac{\arg(3-z_0)}{2\pi}\right\rfloor\log\left(\frac{1}{z_0}\right)+\log(z_0)+\left\lfloor\frac{\arg(3-z_0)}{2\pi}\right\rfloor\log(z_0)-\sum_{k=1}^{\infty}\frac{(-1)^k(3-z_0)^k z_0^{-k}}{k}\right)\right)$$

Integral representations:

$$2\left(\frac{8\sqrt{2}}{(2\times 16\times 4372\exp(-\pi\sqrt{22})+144\times 4372\exp(-\pi\sqrt{37}))\,3}\right)^2-\log_3(2)=$$
$$\left(-13\,934\,385\,936\,e^{2\sqrt{22}\,\pi}\int_1^2\frac{1}{t}\,dt-688\,117\,824\,e^{2\sqrt{37}\,\pi}\int_1^2\frac{1}{t}\,dt-\right.$$
$$\left.6\,193\,060\,416\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}\int_1^2\frac{1}{t}\,dt+e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\int_1^3\frac{1}{t}\,dt\right)\Big/$$
$$\left(172\,029\,456\left(9\,e^{\sqrt{22}\,\pi}+2\,e^{\sqrt{37}\,\pi}\right)^2\int_1^3\frac{1}{t}\,dt\right)$$

$$2\left(\frac{8\sqrt{2}}{(2\times 16\times 4372\exp(-\pi\sqrt{22})+144\times 4372\exp(-\pi\sqrt{37}))\,3}\right)^2-\log_3(2)=$$
$$\left(-13\,934\,385\,936\,e^{2\sqrt{22}\,\pi}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds-\right.$$
$$688\,117\,824\,e^{2\sqrt{37}\,\pi}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds-6\,193\,060\,416\,e^{\sqrt{22}\,\pi+\sqrt{37}\,\pi}$$
$$\left.\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds+e^{2\sqrt{22}\,\pi+2\sqrt{37}\,\pi}\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{2^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)\Big/$$
$$\left(172\,029\,456\left(9\,e^{\sqrt{22}\,\pi}+2\,e^{\sqrt{37}\,\pi}\right)^2\int_{-i\infty+\gamma}^{i\infty+\gamma}\frac{2^{-s}\,\Gamma(-s)^2\,\Gamma(1+s)}{\Gamma(1-s)}\,ds\right)\quad\text{for}\quad -1<\gamma<0$$

Observations

Figs.

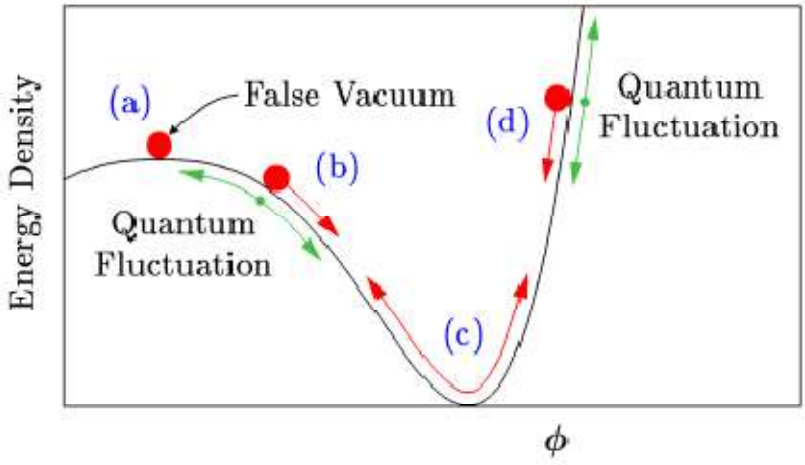
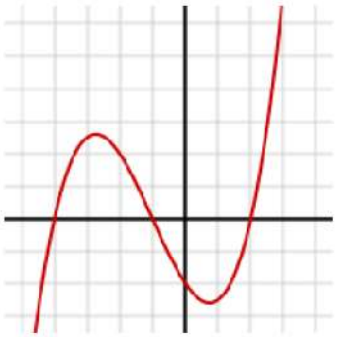


FIG. 1: In simple inflationary models, the universe at early times is dominated by the potential energy density of a scalar field, ϕ. Red arrows show the classical motion of ϕ. When ϕ is near region (a), the energy density will remain nearly constant, $\rho \cong \rho_f$, even as the universe expands. Moreover, cosmic expansion acts like a frictional drag, slowing the motion of ϕ: Even near regions (b) and (d), ϕ behaves more like a marble moving in a bowl of molasses, slowly creeping down the side of its potential, rather than like a marble sliding down the inside of a polished bowl. During this period of "slow roll," ρ remains nearly constant. Only after ϕ has slid most of the way down its potential will it begin to oscillate around its minimum, as in region (c), ending inflation.



Graph of a cubic function with 3 real roots (where the curve crosses the horizontal axis at $y = 0$). The case shown has two critical points. Here the function is $f(x) = (x^3 + 3x^2 - 6x - 8)/4$.

The ratio between M_0 and q

$$M_0 = \sqrt{3q^2 - \Sigma^2},$$

$$q = \frac{\left(3\sqrt{3}\right) M_s}{2}.$$

i.e. the gravitating mass M_0 and the Wheelerian mass q of the wormhole, is equal to:

$$\frac{\sqrt{3\,(2.17049 \times 10^{37})^2 - 0.001^2}}{\frac{1}{2}\left((3\sqrt{3})\,(4.2 \times 10^6 \times 1.9891 \times 10^{30})\right)}$$

1.732050787905194420703947625671018160083566548802082460520...

1.7320507879

$1.7320507879 \approx \sqrt{3}$ that is the ratio between the gravitating mass M_0 and the Wheelerian mass q of the wormhole

We note that:

$$\left(-\frac{1}{2} + \frac{i}{2}\sqrt{3}\right) - \left(-\frac{1}{2} - \frac{i}{2}\sqrt{3}\right)$$

i is the imaginary unit

$i\sqrt{3}$

1.732050807568877293527446341505872366942805253810380628055... i

$r \approx 1.73205$ (radius), $\theta = 90°$ (angle)

1.73205

This result is very near to the ratio between M_0 and q, that is equal to $1.7320507879 \approx \sqrt{3}$

With regard $\sqrt{3}$, we note that is a fundamental value of the formula structure that we need to calculate a Cubic Equation

We have that the previous result

$$\left(-\frac{1}{2}+\frac{i}{2}\sqrt{3}\right)-\left(-\frac{1}{2}-\frac{i}{2}\sqrt{3}\right) = i\sqrt{3} =$$

$$= 1.732050807568877293527446341505872366942805253810380628055\ldots\, i$$

$$r \approx 1.73205 \text{ (radius)}, \quad \theta = 90° \text{ (angle)}$$

can be related with:

$$u^2(-u)\left(\frac{1}{2}\pm\frac{i\sqrt{3}}{2}\right)+v^2(-v)\left(\frac{1}{2}\pm\frac{i\sqrt{3}}{2}\right)=q$$

Considering:

$$(-1)\left(\frac{1}{2}-\frac{i\sqrt{3}}{2}\right)-(-1)\left(\frac{1}{2}+\frac{i\sqrt{3}}{2}\right)=q$$

$$= i\sqrt{3} = 1.732050807568877293527446341505872366942805253810380628055\ldots\, i$$

$$r \approx 1.73205 \text{ (radius)}, \quad \theta = 90° \text{ (angle)}$$

Thence:

$$\left(-\frac{1}{2}+\frac{i}{2}\sqrt{3}\right)-\left(-\frac{1}{2}-\frac{i}{2}\sqrt{3}\right) \Rightarrow$$

$$\Rightarrow (-1)\left(\frac{1}{2}-\frac{i\sqrt{3}}{2}\right)-(-1)\left(\frac{1}{2}+\frac{i\sqrt{3}}{2}\right)=q=1.73205\approx\sqrt{3}$$

We observe how the graph above, concerning the cubic function, is very similar to the graph that represent the scalar field (in red). It is possible to hypothesize that cubic functions and cubic equations, with their roots, are connected to the scalar field.

From:

https://www.scientificamerican.com/article/mathematics-ramanujan/?fbclid=IwAR2caRXrn_RpOSvJ1QxWsVLBcJ6KVgd_Af_hrmDYBNyU8mpSjRs1BDeremA

Ramanujan's statement concerned the deceptively simple concept of partitions—the different ways in which a whole number can be subdivided into smaller numbers. Ramanujan's original statement, in fact, stemmed from the observation of patterns, such as the fact that p(9) = 30, p(9 + 5) = 135, p(9 + 10) = 490, p(9 + 15) = 1,575 and so on are all divisible by 5. Note that here the n's come at intervals of five units.

Ramanujan posited that this pattern should go on forever, and that similar patterns exist when 5 is replaced by 7 or 11—there are infinite sequences of p(n) that are all divisible by 7 or 11, or, as mathematicians say, in which the "moduli" are 7 or 11.

Then, in nearly oracular tone Ramanujan went on: "There appear to be corresponding properties," he wrote in his 1919 paper, "in which the moduli are powers of 5, 7 or 11...and no simple properties for any moduli involving primes other than these three." (Primes are whole numbers that are only divisible by themselves or by 1.) Thus, for instance, there should be formulas for an infinity of n's separated by 5^3 = 125 units, saying that the corresponding p(n)'s should all be divisible by 125.
In the past methods developed to understand partitions have later been applied to physics problems such as the theory of the strong nuclear force or the entropy of black holes.

From Wikipedia

In particle physics, Yukawa's interaction or Yukawa coupling, named after Hideki Yukawa, is an interaction between a scalar field ϕ and a Dirac field ψ. The Yukawa interaction can be used to describe the nuclear force between nucleons (which are fermions), mediated by pions (which are pseudoscalar mesons). The Yukawa interaction is also used in the Standard Model to describe the coupling between the Higgs field and massless quark and lepton fields (i.e., the fundamental fermion particles). Through spontaneous symmetry breaking, these fermions acquire a mass proportional to the vacuum expectation value of the Higgs field.

Can be this the motivation that from the development of the Ramanujan's equations we obtain results very near to the dilaton mass calculated as a type of Higgs boson: 125 GeV for T = 0 and to the Higgs boson mass 125.18 GeV and practically equal to the rest mass of Pion meson 139.57 MeV

Note that:

$$g_{22} = \sqrt{(1+\sqrt{2})}.$$

Hence

$$\begin{aligned} 64g_{22}^{24} &= e^{\pi\sqrt{22}} - 24 + 276e^{-\pi\sqrt{22}} - \cdots, \\ 64g_{22}^{-24} &= 4096e^{-\pi\sqrt{22}} + \cdots, \end{aligned}$$

so that

$$64(g_{22}^{24} + g_{22}^{-24}) = e^{\pi\sqrt{22}} - 24 + 4372e^{-\pi\sqrt{22}} + \cdots = 64\{(1+\sqrt{2})^{12} + (1-\sqrt{2})^{12}\}.$$

Hence

$$e^{\pi\sqrt{22}} = 2508951.9982\ldots.$$

Thence:

$$64g_{22}^{-24} = 4096e^{-\pi\sqrt{22}} + \cdots$$

And

$$64(g_{22}^{24} + g_{22}^{-24}) = e^{\pi\sqrt{22}} - 24 + 4372e^{-\pi\sqrt{22}} + \cdots = 64\{(1+\sqrt{2})^{12} + (1-\sqrt{2})^{12}\}$$

That are connected with 64, 128, 256, 512, 1024 and 4096 = 64^2

(Modular equations and approximations to π - S. Ramanujan - Quarterly Journal of Mathematics, XLV, 1914, 350 – 372)

All the results of the most important connections are signed in blue throughout the drafting of the paper. We highlight as in the development of the various equations we use always the constants π, ϕ, 1/ϕ, the Fibonacci and Lucas numbers, linked to the golden ratio, that play a fundamental role in the development, and therefore, in the final results of the analyzed expressions.

In mathematics, the Fibonacci numbers, commonly denoted F_n, form a sequence, called the Fibonacci sequence, such that each number is the sum of the two preceding ones, starting from 0 and 1. Fibonacci numbers are strongly related to the golden ratio: Binet's formula expresses the nth Fibonacci number in terms of n and the golden ratio, and implies that the ratio of two consecutive Fibonacci numbers tends to the golden ratio as n increases.
Fibonacci numbers are also closely related to Lucas numbers ,in that the Fibonacci and Lucas numbers form a complementary pair of Lucas sequences

The beginning of the sequence is thus:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, 46368, 75025, 121393, 196418, 317811, 514229, 832040, 1346269, 2178309, 3524578, 5702887, 9227465, 14930352, 24157817, 39088169, 63245986, 102334155...

The Lucas numbers or Lucas series are an integer sequence named after the mathematician François Édouard Anatole Lucas (1842–91), who studied both that sequence and the closely related Fibonacci numbers. Lucas numbers and Fibonacci numbers form complementary instances of Lucas sequences.

The Lucas sequence has the same recursive relationship as the Fibonacci sequence, where each term is the sum of the two previous terms, but with different starting values. This produces a sequence where the ratios of successive terms approach the golden ratio, and in fact the terms themselves are roundings of integer powers of the golden ratio.[1] The sequence also has a variety of relationships with the Fibonacci numbers, like the fact that adding any two Fibonacci numbers two terms apart in the Fibonacci sequence results in the Lucas number in between.

The sequence of Lucas numbers is:

2, 1, 3, 4, 7, 11, 18, 29, 47, 76, 123, 199, 322, 521, 843, 1364, 2207, 3571, 5778, 9349, 15127, 24476, 39603, 64079, 103682, 167761, 271443, 439204, 710647, 1149851, 1860498, 3010349, 4870847, 7881196, 12752043, 20633239, 33385282, 54018521, 87403803……

All Fibonacci-like integer sequences appear in shifted form as a row of the Wythoff array; the Fibonacci sequence itself is the first row and the Lucas sequence is the second row. Also like all Fibonacci-like integer sequences, the ratio between two consecutive Lucas numbers converges to the golden ratio.

A Lucas prime is a Lucas number that is prime. The first few Lucas primes are:

2, 3, 7, 11, 29, 47, 199, 521, 2207, 3571, 9349, 3010349, 54018521, 370248451, 6643838879, ... (sequence A005479 in the OEIS).

In geometry, a golden spiral is a logarithmic spiral whose growth factor is φ, the golden ratio.[1] That is, a golden spiral gets wider (or further from its origin) by a factor of φ for every quarter turn it makes. Approximate logarithmic spirals can occur in nature, for example the arms of spiral galaxies[3] - golden spirals are one special case of these logarithmic spirals

We observe that 1728 and 1729 are results very near to the mass of candidate glueball **f_0(1710) scalar 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 (taxicab number).

Furthermore, we obtain as results of our computations, always values very near to the Higgs boson mass 125.18 GeV and practically equals to the rest mass of Pion meson 139.57 MeV. In conclusion we obtain also many results that are very good approximations to the value of the golden ratio 1.618033988749... and to ζ(2) = $\frac{\pi^2}{6} = 1.644934 \ldots$

We note how the following three values: 137.508 (golden angle), 139.57 (mass of the Pion - meson Pi) and 125.18 (mass of the Higgs boson), are connected to each other. In fact, just add 2 to 137.508 to obtain a result very close to the mass of the Pion and subtract 12 to 137.508 to obtain a result that is also very close to the mass of the Higgs boson. We can therefore hypothesize that it is the golden angle (and the related golden ratio inherent in it) to be a fundamental ingredient both in the structures of the microcosm and in those of the macrocosm.

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