Consideration of the Riemann hypothesis

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Abstract

I treat Riemann hypothesis as a series and try to prove it, but I have not shown that non-trivial zeros are only present on the real value 1/2, but only as close to 1/2.

The hypothesis could not be proved. Only on the graph and in calculation, only the neighborhood of the real value 1/2 is shown.

It was also shown that non-trivial zero values deviate only by 0.01 and do not converge clearly to 0.

It has been shown graphically and computationally that non-trivial zeros exist only near real numbers 1/2 or 1/2 and can not exist in parts such as real numbers 0.6 or 0.4.

I provide a formula concerned with Riemann-Zeta function wherein non-trivial zero values perfectly match. However, the formula only reaches the pole near the real value of 1/2.

key words
Riemann-Zeta function, non-trivial zero point, infinite series

1 introduction

$$\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s} \qquad s = c + ix \tag{1}$$

If c = 1/2, x is non-trivial zero value, then Eq.(1) becomes zero.

$$\zeta(s) = 2^s \pi^{s-1} \sin\left(\tfrac{s\pi}{2}\right) \Gamma(1-s)\zeta(1-s) \tag{2}$$

$$\xi(s) = \frac{1}{2} s(s-1)\pi^{-s/2}\Gamma\left(\tfrac{1}{2}s\right)\zeta(s) \tag{3}$$

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which satisfies:

$$\xi(s) = \xi(1-s) \tag{4}$$

The formula

$$\cos\theta + i\sin\theta = e^{i\theta}$$

can be rewritten as shown below.

$$\cos\theta - i\sin\theta = e^{-i\theta}$$

Riemann-Zeta Function is also defined as below.(put s = c +ix.)

$$(1-\frac{2}{2^s})\zeta(s) = \sum_{n=1}^{\infty}\frac{(-1)^{n+1}}{n^s} = \sum_{n=1}^{\infty}\frac{1}{(2n-1)^s} - \sum_{n=1}^{\infty}\frac{1}{(2n)^s} \tag{5}$$

$$= \sum_{n=1}^{\infty}[\frac{1}{(2n-1)^{c+ix}} - \frac{1}{(2n)^{c+ix}}] = \sum_{n=1}^{\infty}[\frac{(2n-1)^{-ix}}{(2n-1)^c} - \frac{(2n)^{-ix}}{(2n)^c}] \tag{6}$$

Using the formula $a^{b+ix} = a^b[\cos(x\ln a) + i\sin(x\ln a)]$
equal $a^{b-ix} = a^b[\cos(x\ln a) - i\sin(x\ln a)]$
if b=0 $a^{-ix} = \cos(x\ln a) - i\sin(x\ln a)$
equal $(2n)^{-ix} = \cos(x\ln(2n)) - i\sin(x\ln(2n))$

$$= \sum_{n=1}^{\infty}[\frac{\cos(x\ln(2n-1)) - i\sin(x\ln(2n-1))}{(2n-1)^c} - \frac{\cos(x\ln(2n)) - i\sin(x\ln(2n))}{(2n)^c}] \tag{7}$$

$$\zeta(s) = [1/(1-2^{1-s})]\sum_{n=1}^{\infty}\frac{(-1)^{n+1}}{n^s} \tag{8}$$

$$= [1/(1-2^{1-s})]\sum_{n=1}^{\infty}[\frac{\cos(x\ln(2n-1)) - i\sin(x\ln(2n-1))}{(2n-1)^c} - \frac{\cos(x\ln(2n)) - i\sin(x\ln(2n))}{(2n)^c}] = 0 \tag{9}$$

$$[1/(1-2^{1-s})] \neq 0 \tag{10}$$

$$\sum_{n=1}^{\infty}[\frac{\cos(x\ln(2n-1))}{(2n-1)^c} - \frac{\cos(x\ln(2n))}{(2n)^c}] = 0 \tag{11}$$

$$\sum_{n=1}^{\infty}[\frac{\sin(x\ln(2n-1))}{(2n-1)^c} - \frac{\sin(x\ln(2n))}{(2n)^c}] = 0 \tag{12}$$

Although x is treated as a real number, x is a non-trivial zero value.

From Eq.(9), it is estimated that cos is a real value and sin is an imaginary value. When this real value and the imaginary value reach zero simultaneously, they become non-trivial zero value.

Eq.(11) and Eq.(12) hold when c = 1/2, x is non-trivial zero value.

2 Examples

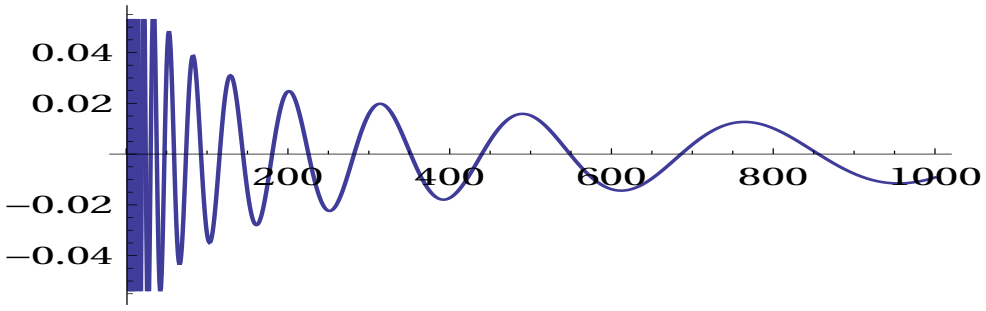
In the graph that clearly does not converge to 0, it is often the case that numerical calculations are omitted.
The graph and the first numerical calculation depended on WolframAlpha on the net.
The detailed calculations below the graph depend on Libre-office.

Chapter 1

(14.1347- 0.001)

$$\sum_{n=1}^{1000}[\frac{\cos[(14.1337)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(14.1337)\ln(2n)]}{(2n)^{0.5}}] \tag{13}$$

= -0.009225305555779525779463237679646088942314....



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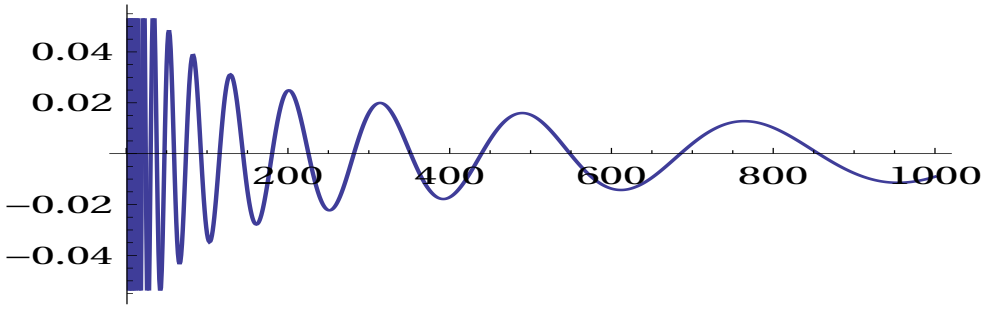
[10000000]=-0.0001607114065385512091
[100000000]=-0.0001509936635404196949
It does not converge to 0.

(14.1347 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(14.1347)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(14.1347)\ln(2n)]}{(2n)^{0.5}}] \tag{14}$$

= -0.009063013671335821519956190406232181070163....



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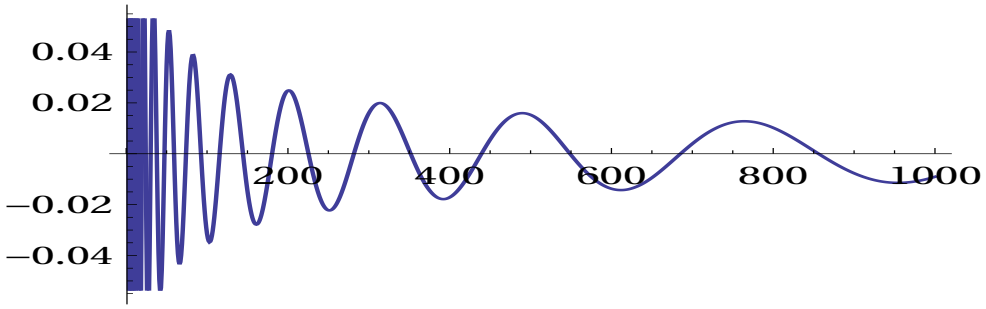
[10000000]=-0.0000496479275200912434
[100000000]=0.0000382288508812898928
converge to 0.

(14.1347+ 0.01=14.1447)

$$\sum_{n=1}^{1000}[\frac{\cos[(14.1447)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(14.1447)\ln(2n)]}{(2n)^{0.5}}] \tag{15}$$

= -0.007243403455155722480043192935285864376....



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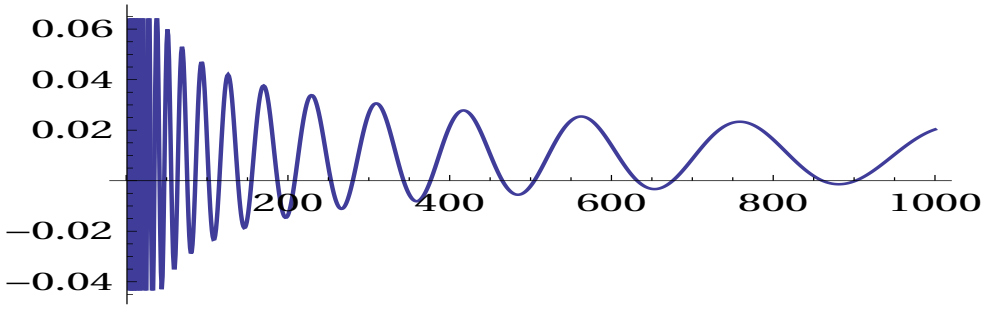
[1000000]=0.001479197361182810893 7
[10000000]=0.001230179240683403193 6
[100000000]=0.001258515454485119224 7
It does not converge to 0.

(21.022 - 0.01=21.012)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.0120)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(21.0120)\ln(2n)]}{(2n)^{0.5}}] \tag{16}$$

= 0.020284892554040908827580134599210942 9....



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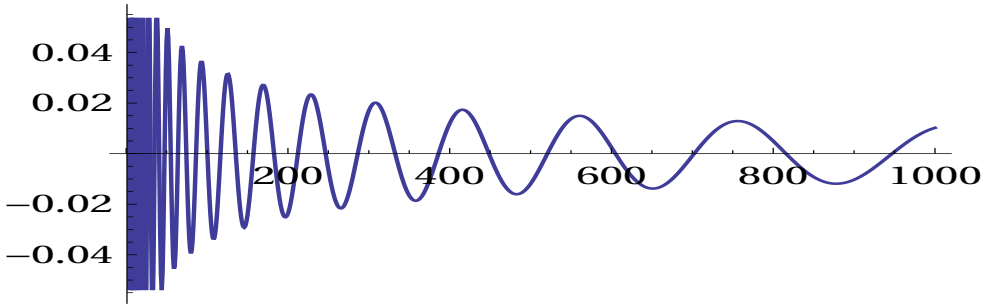
[10000000]= 0.0104843503975115531074
[100000000]=0.0104746550659218524287
It does not converge to 0.

(21.0220 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.0220)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(21.0220)\ln(2n)]}{(2n)^{0.5}}] \tag{17}$$

= 0.010203050972979707561650919065336067554 57....



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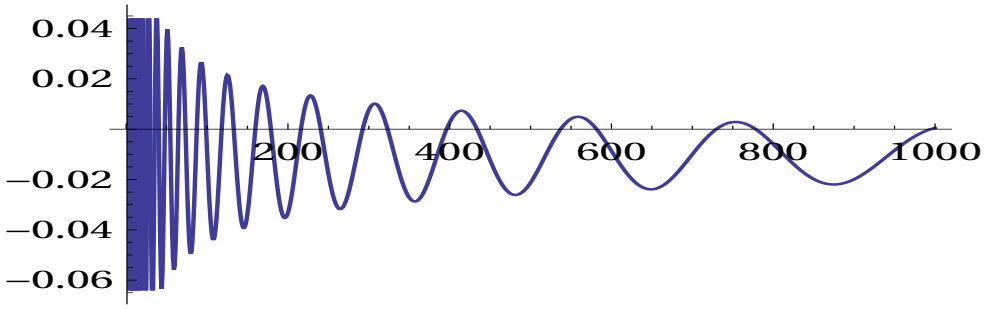
[1000000]=0.0003817627764431225329
[10000000]=0.0000380957809653702473
[100000000]=0.0000070544092957442871
converge to 0.

(21.0220+0.01=22.0320)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.0320)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(21.0320)\ln(2n)]}{(2n)^{0.5}}] \tag{18}$$

= 0.009213501661674673769220937361896999026864....



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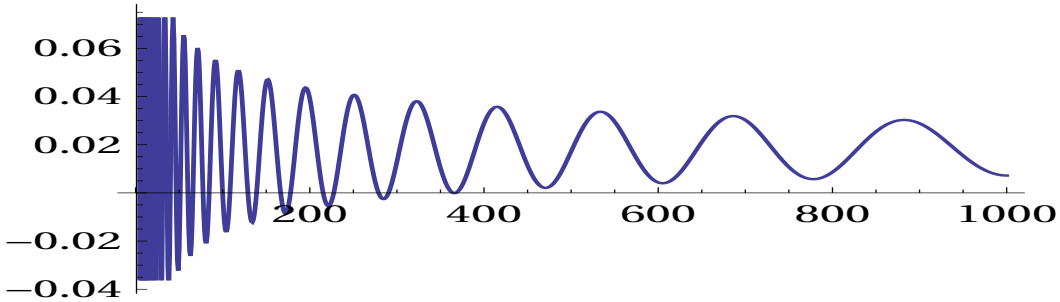
[1000000]=-0.0097014813569226230477
[10000000]=-0.0100093633835118597103
[100000000]=-0.0100605988203420360777
It does not converge to 0.

(25.0109-0.01=25.0009)

$$\sum_{n=1}^{1000}[\frac{\cos[(25.0009)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(25.0009)\ln(2n)]}{(2n)^{0.5}}] \tag{19}$$

= 0.007208956867091058558975679870786427234417....



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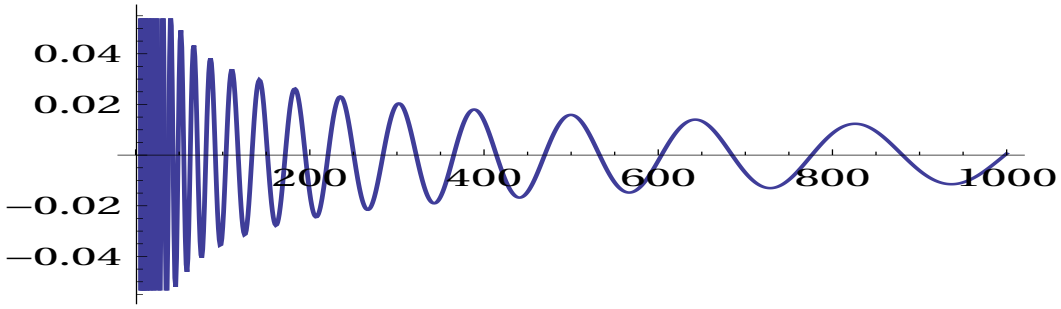
[10000000]=-0.0140059815308212903817
[100000000]=-0.0139521725046484450922
It does not converge to 0.

(25.0109 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(25.0109)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(25.0109)\ln(2n)]}{(2n)^{0.5}}] \tag{20}$$

= 0.000566416876954385417515398449827019508 07....



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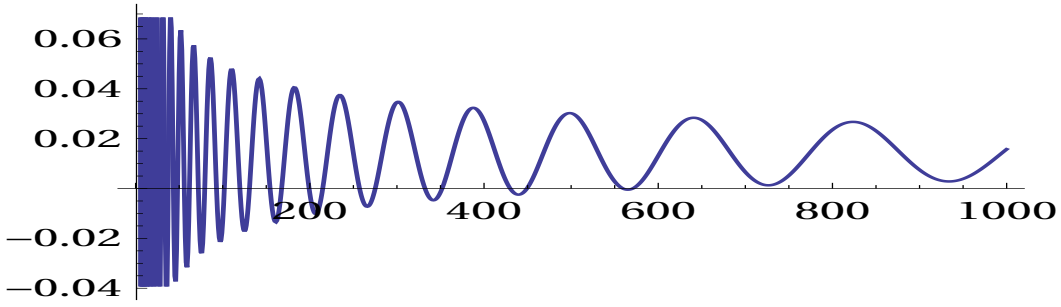
[10000000]=-0.000037554455630730 2004
[100000000]=0.000029600513475824 6658
converge to 0.

(25.0109+0.01=25.0209)

$$\sum_{n=1}^{1000}[\frac{\cos[(25.0209)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(25.0209)\ln(2n)]}{(2n)^{0.5}}] \tag{21}$$

= 0.015754324638897008068077546402916552259 3....



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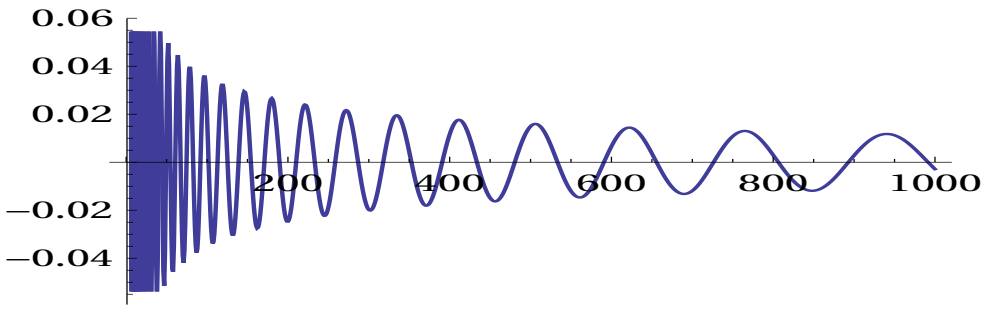
[10000000]=0.014296018128796971 9660
[100000000]=0.014374876276240306 6440
It does not converge to 0.

(30.4249 - 0.01=30.4149)

$$\sum_{n=1}^{1000}[\frac{\cos[(30.4149)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(30.4149)\ln(2n)]}{(2n)^{0.5}}] \tag{22}$$

= -0.0028564090182572409517325344565291710 1....



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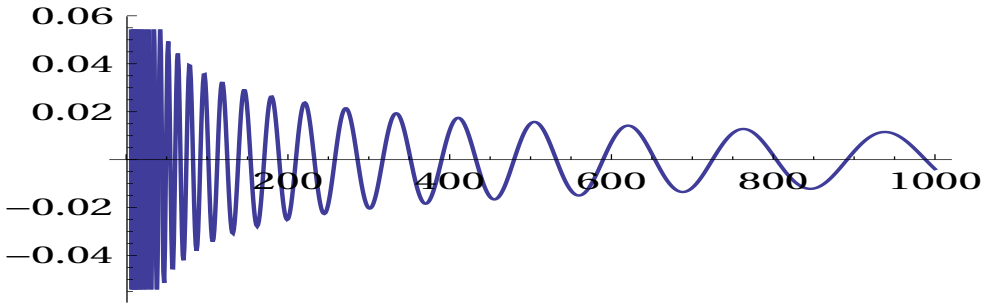
[10000000]= 0.000326759599954465915 6
[100000000]=0.000281242959445802444 3
It does not converge to 0.

(30.4249 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(30.4249)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(30.4249)\ln(2n)]}{(2n)^{0.5}}] \tag{23}$$

= -0.0039090902351357602935409305501247 7....



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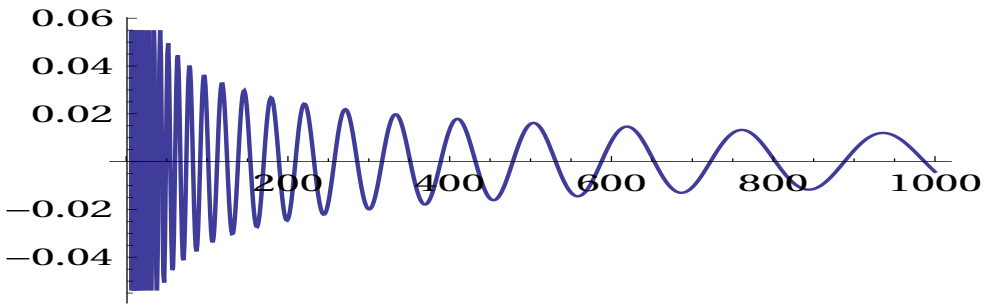
[10000000]=0.000092555527005998150 9
[100000000]=0.000033542737343197381 9
converge to 0.

(30.4249+0.01=30.4349)

$$\sum_{n=1}^{1000}[\frac{\cos[(30.4349)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(30.4349)\ln(2n)]}{(2n)^{0.5}}] \tag{24}$$

= -0.00425244052618425565079489905987755 8....



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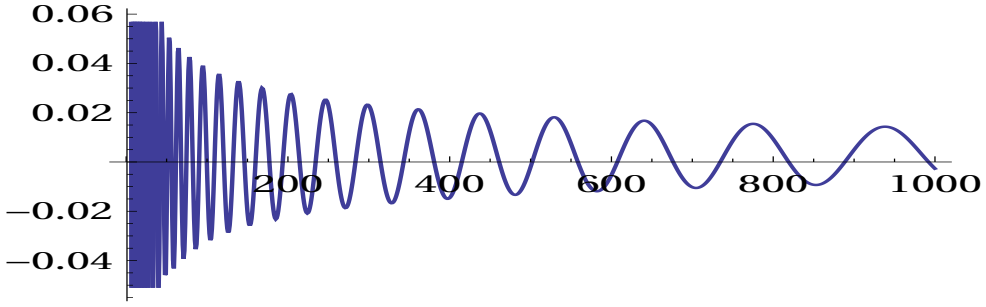
[10000000]=0.0005425030774031609814
[100000000]=0.0004713839500665595187
It does not converge to 0.

(32.9351 -0.01=32.9251)

$$\sum_{n=1}^{1000}[\frac{\cos[(32.9251)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(32.9251)\ln(2n)]}{(2n)^{0.5}}] \tag{25}$$

= -0.00270200788075833260340900096138 37....



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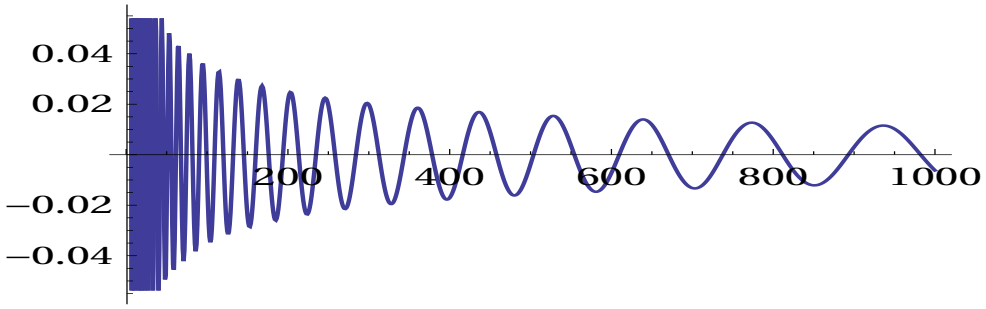
[10000000]=0.0026830551451150455762
[100000000]=0.0027569421199088403086
It does not converge to 0.

(32.9351 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(32.9351)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(32.9351)\ln(2n)]}{(2n)^{0.5}}] \tag{26}$$

= -0.006211350232338428548135531520246 2....



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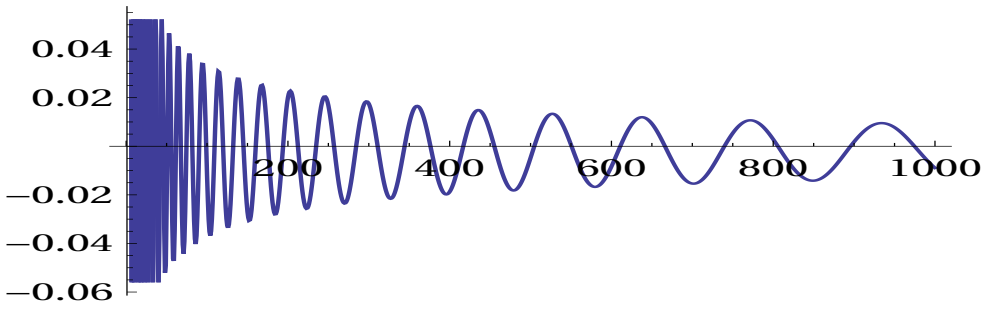
[10000000]=-0.0000903248133043883523
[100000000]=-0.0000221594074273025880
converge to 0.

(32.9351+0.01= 32.9451)

$$\sum_{n=1}^{1000}[\frac{\cos[(32.9451)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(32.9451)\ln(2n)]}{(2n)^{0.5}}] \tag{27}$$

= -0.008931280247269008024066371515947 13....



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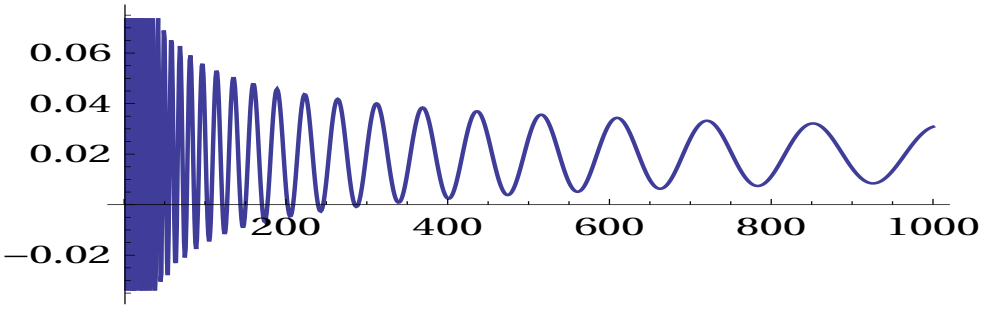
[10000000]=-0.0021078236331256560571
[100000000]=-0.0020471956046321931888
It does not converge to 0.

(37.5862- 0.01= 37.5762)

$$\sum_{n=1}^{1000}[\frac{\cos[(37.5762)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(37.5762)\ln(2n)]}{(2n)^{0.5}}] \tag{28}$$

= 0.030834015062143617825619153097923....



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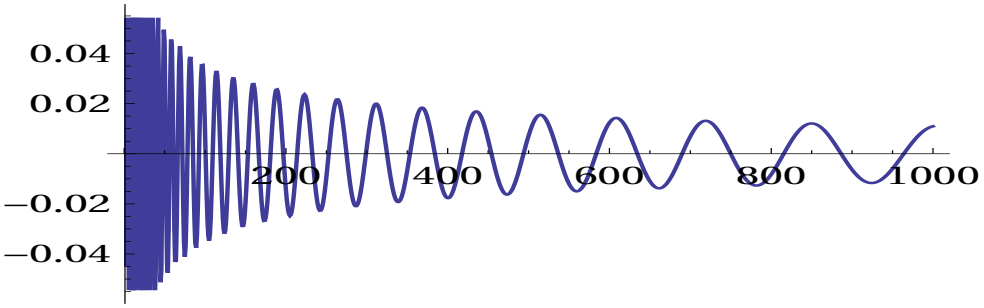
[10000000]=0.0201460868782911001196
[100000000]=0.020050376058501337 4174
It does not converge to 0.

(37.5862 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(37.5862)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(37.5862)\ln(2n)]}{(2n)^{0.5}}] \tag{29}$$

= 0.010941795390264808277991901745991 1428....



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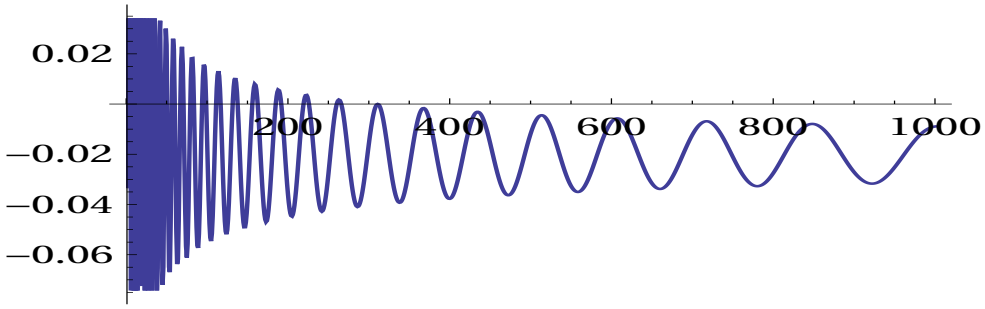
[1000000]=-0.0001343416061451328184
[10000000]=0.0000587167172489908842
[100000000]=-0.0000249459169129748873
converge to 0.

(37.5862 +0.01= 37.5962)

$$\sum_{n=1}^{1000}[\frac{\cos[(37.5962)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(37.5962)\ln(2n)]}{(2n)^{0.5}}] \tag{30}$$

= -0.008946020896821952473793952327356 2....



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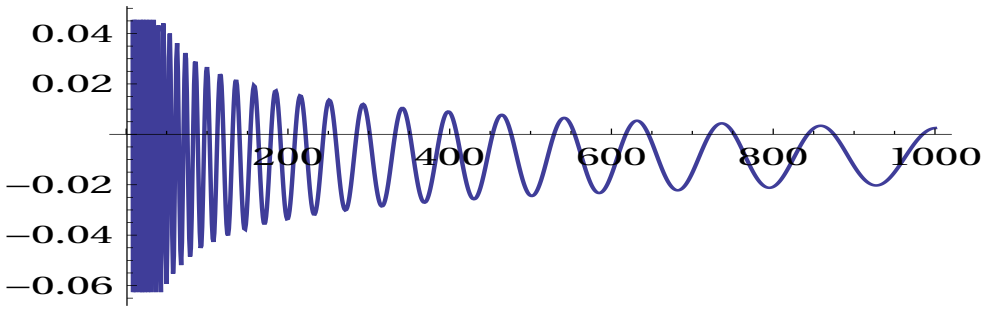
[1000000]=-0.020196304613078114309 5
[10000000]=-0.019963698911792331081 0
[100000000]=-0.020033109532961002052 8
It does not converge to 0.

(40.9187 -0.01= 40.9087)

$$\sum_{n=1}^{1000}[\frac{\cos[(40.9087)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(40.9087)\ln(2n)]}{(2n)^{0.5}}] \tag{31}$$

=0.002480935611445674636260370820510 05....



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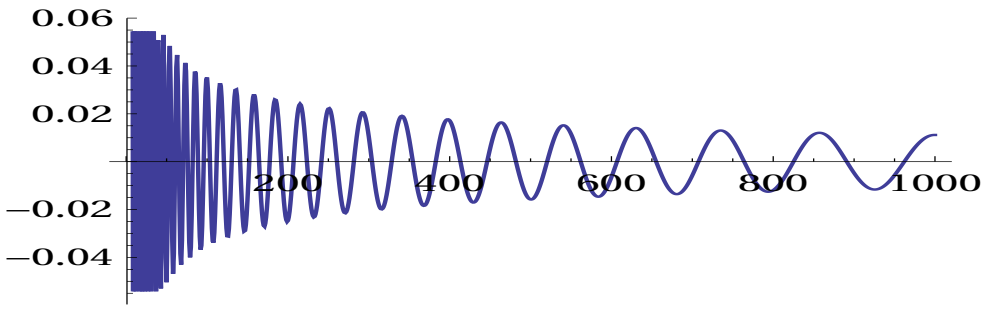
[1000000]=-0.008331223600744662796 7
[10000000]=-0.008568046737592489858 8
[100000000]=-0.008642018950006009198 1
It does not converge to 0.

(40.9187 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(40.9187)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(40.9187)\ln(2n)]}{(2n)^{0.5}}] \tag{32}$$

$= 0.011161443040664347323838871759731....$



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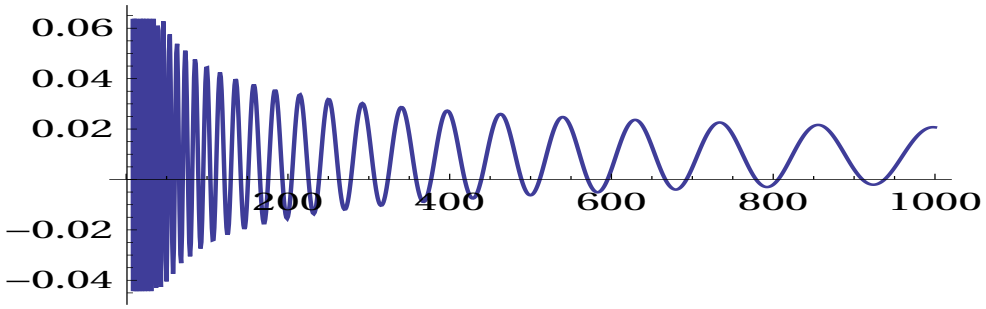
[1000000]=0.000334928134207077 4877
[10000000]=0.0000937391247718045875
[100000000]=0.000017660473451030 5102
converge to 0.

(40.9187 +0.01= 40.9287)

$$\sum_{n=1}^{1000}[\frac{\cos[(40.9287)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(40.9287)\ln(2n)]}{(2n)^{0.5}}] \tag{33}$$

$= 0.020687831213847101540936884668 6....$

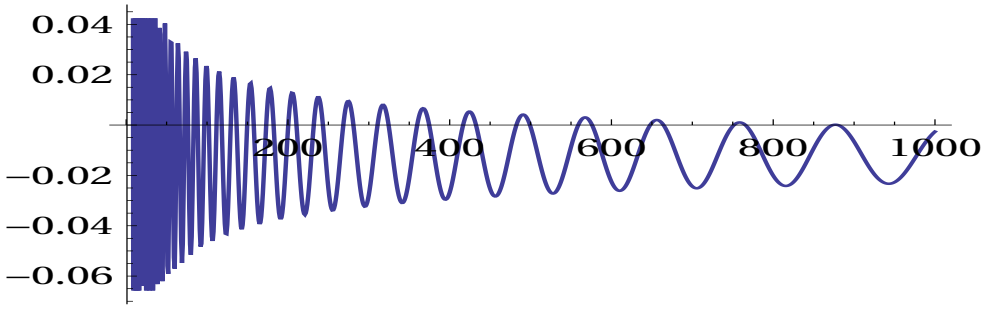


[10000]=0.013077406670826262 3471
[100000]=0.010666818924865961 3794
[1000000]=0.009904115606722899 1455
[10000000]=0.009662831167002216 0734
[100000000]=0.009586503244944534 8323
It does not converge to 0.

(43.3271 -0.01= 43.3171)

$$\sum_{n=1}^{1000}[\frac{\cos[(43.3171)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(43.3171)\ln(2n)]}{(2n)^{0.5}}] \tag{34}$$

= -0.0026271844642819244706123872647....

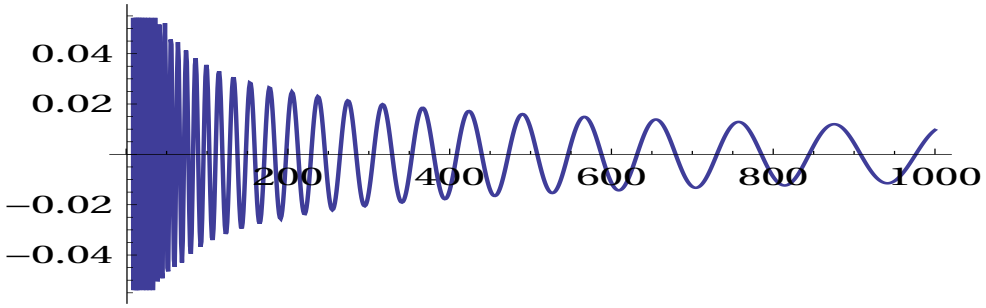


[10000]=-0.0112300972457555110762
[100000]=-0.012463077642404509284 8
[1000000]=-0.012156828353971655537 5
[10000000]=-0.011897480026873120256 8
[100000000]=-0.011812625215642354875 6
It does not converge to 0.

(43.3271 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(43.3271)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(43.3271)\ln(2n)]}{(2n)^{0.5}}] \tag{35}$$

= 0.0096709062601568841435143303118043 40....

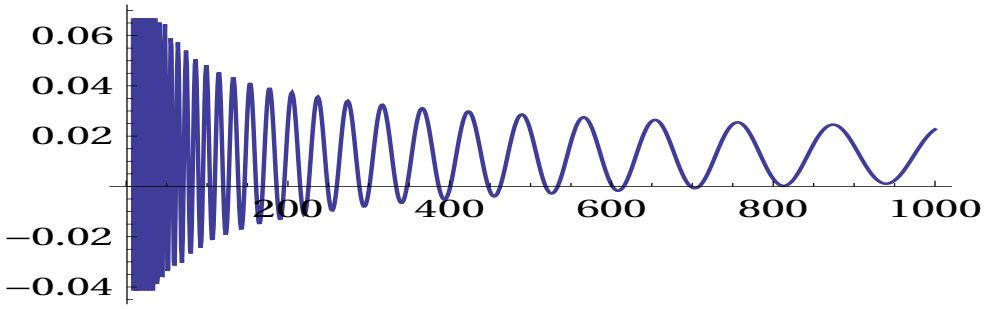


[10000]=0.0009520515105505345573
[100000]=-0.0005078252057554809556
[1000000]=-0.0003051887688908388216
[10000000]=-0.0000672058546933808392
converge to 0.

(43.3271 +0.01= 43.3371)

$$\sum_{n=1}^{1000}[\frac{\cos[(43.3371)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(43.3371)\ln(2n)]}{(2n)^{0.5}}] \tag{36}$$

= 0.00967090626015688414351433031 18....

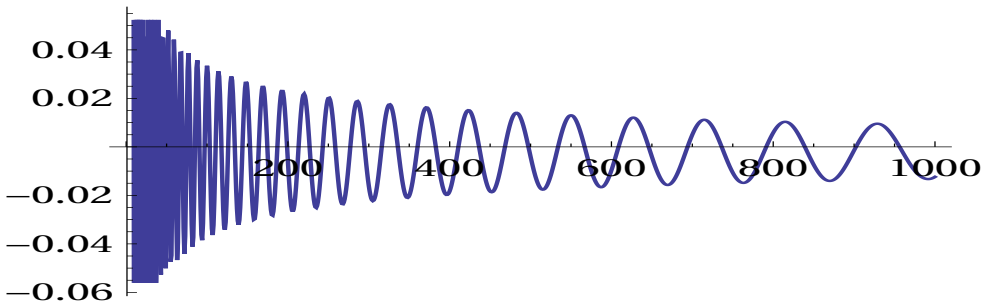


[10000]=0.0138611334436689482424
[100000]=0.0121914127967915099371
[1000000]= 0.012289492830283882 3964
[10000000]=0.012501826510261116 9509
It does not converge to 0.

(48.0052 -0.01=47.9952)

$$\sum_{n=1}^{1000}[\frac{\cos[(47.9952)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(47.9952)\ln(2n)]}{(2n)^{0.5}}] \tag{37}$$

= -0.012377763685720218921643303546....

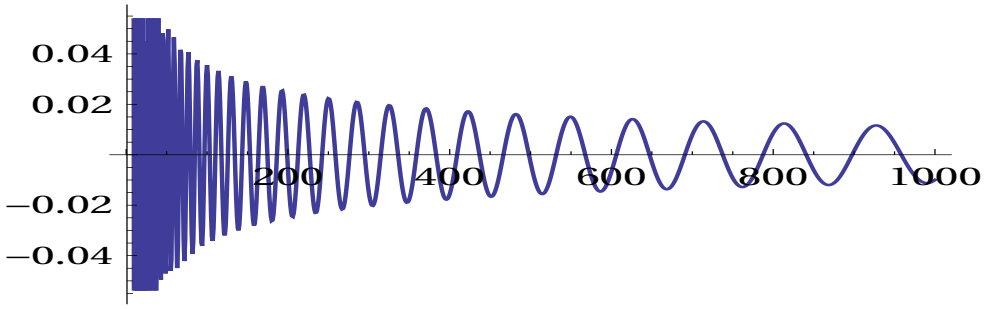


[10000]=0.0000285799991242556995
[100000]=-0.0021376413863578289966
[1000000]=-0.0022192255925806937331
[10000000]=-0.0019585239647509334292
It does not converge to 0.

(48.0052 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(48.0052)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(48.0052)\ln(2n)]}{(2n)^{0.5}}] \tag{38}$$

= -0.009954710963835234494265321374....

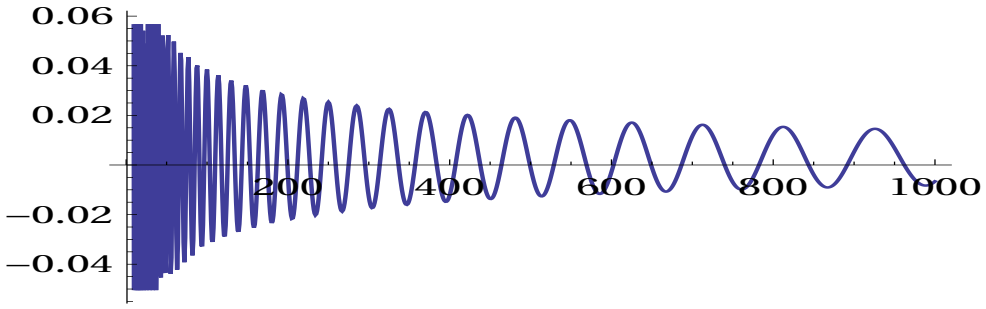


[10000]=0.0018032285340410843938
[100000]=0.0000660014107200388242
[1000000]=-0.0001954933851270815727
[10000000]=0.0001168501874528188322
[100000000]=-0.0000222158682941726699
converge to 0.

(48.0052 +0.01=48.0152)

$$\sum_{n=1}^{1000}[\frac{\cos[(48.0152)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(48.0152)\ln(2n)]}{(2n)^{0.5}}] \tag{39}$$

= -0.006597815652933799152944355 89....

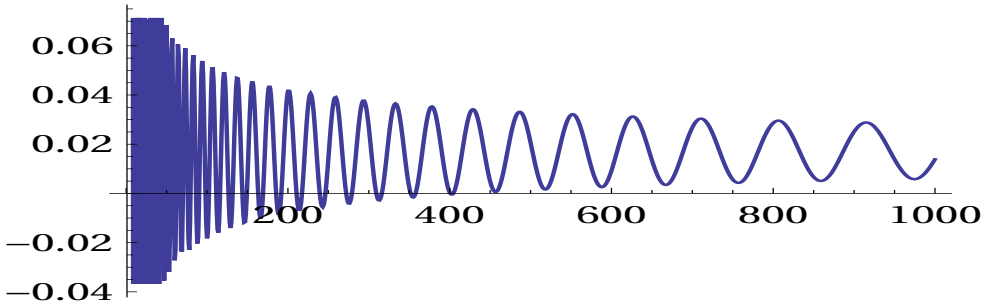


[10000]= 0.004436609451601607 8841
[100000]=0.003145128502502252 5550
[1000000]=0.002708888632252643 9104
[10000000]=0.003065559934436537 0811
[100000000]=0.002923420376922195 6369
It does not converge to 0.

(49.7738- 0.01=49.7638)

$$\sum_{n=1}^{1000}[\frac{\cos[(49.7638)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(49.7638)\ln(2n)]}{(2n)^{0.5}}] \tag{40}$$

= 0.013838181877048842824089368339....

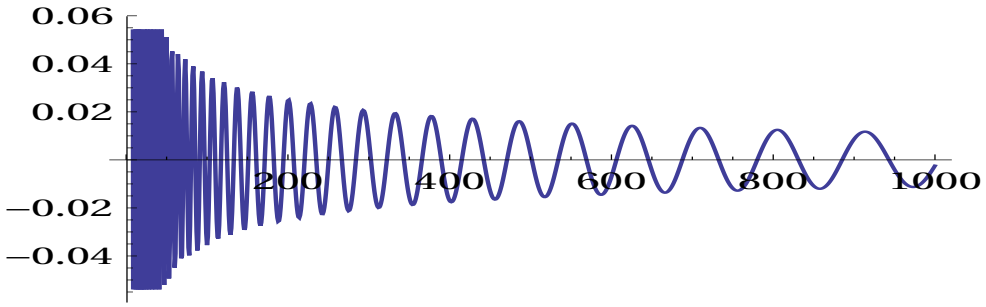


[10000]=0.0204037589236460217834
[100000]=0.0176524483959972777747
[1000000]=0.016839165869566175 6984
[10000000]=0.017071601396788208 6766
[100000000]=0.017165092076171818 7024
It does not converge to 0.

(49.7738 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(49.7738)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(49.7738)\ln(2n)]}{(2n)^{0.5}}] \tag{41}$$

= -0.0024255224784346000297790240598 6....

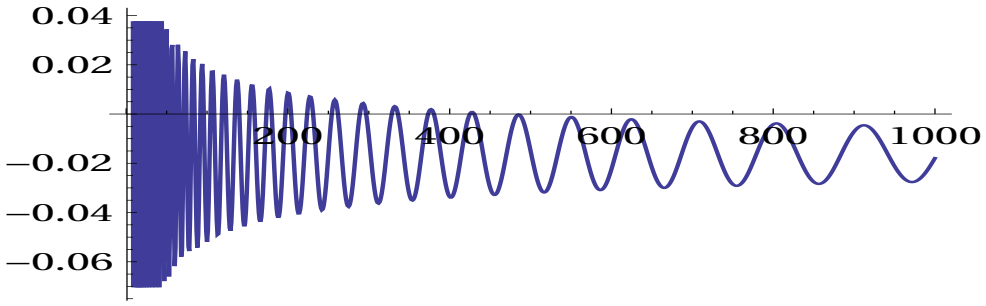


[10000]=0.0034374613798155602418
[100000]=0.0004433508278073949134
[1000000]=-0.0002692269558208497827
[10000000]=0.0000031448364606872906
[100000000]=0.0000016971109376292873
converge to 0.

(49.7738+ 0.01=49.7838)

$$\sum_{n=1}^{1000}[\frac{\cos[(49.7838)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(49.7838)\ln(2n)]}{(2n)^{0.5}}] \tag{42}$$

= -0.017925530427917274476344602323795 46....

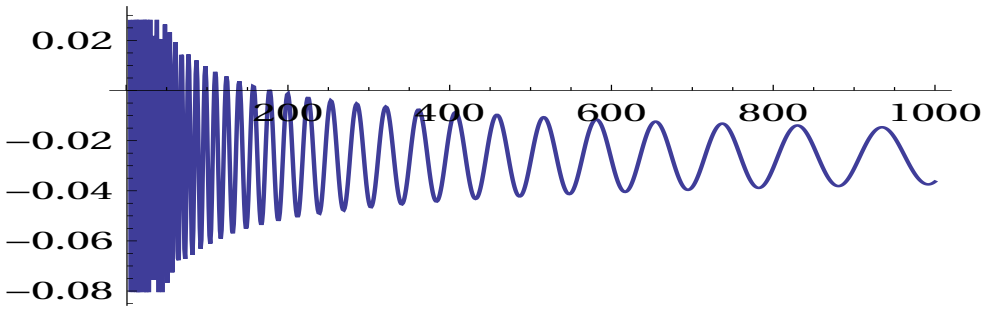


[10000]=-0.0128126155902118996077
[100000]=-0.0160221607044494576688
[1000000]=-0.0166214463360710926199
[10000000]=-0.0163144944504915699601
[100000000]=-0.0162474302505595455398
It does not converge to 0.

(52.9703 -0.01=52.9603)

$$\sum_{n=1}^{1000}[\frac{\cos[(52.9603)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(52.9603)\ln(2n)]}{(2n)^{0.5}}] \tag{43}$$

= -0.036355181418336957787246132966042....

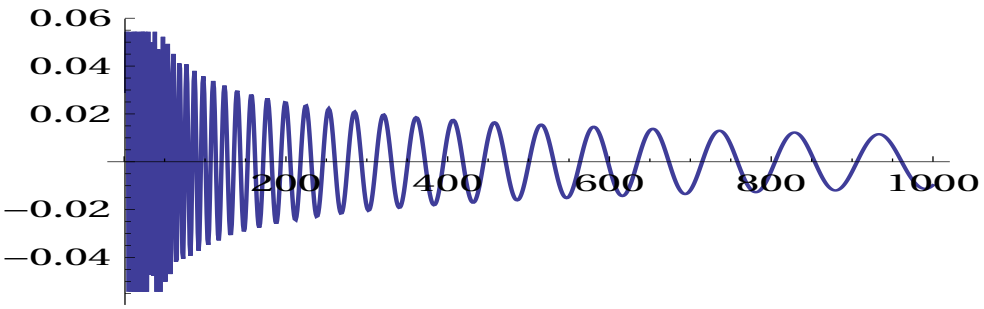


[10000]=-0.022724393014825275 4053
[100000]=-0.027051215817451498 8351
[1000000]=-0.026126518804128518 5971
[10000000]=-0.026184166125998539 7647
[100000000]=-0.026246061598342640 4085
It does not converge to 0.

(52.9703 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(52.9703)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(52.9703)\ln(2n)]}{(2n)^{0.5}}] \tag{44}$$

=0.009478520014068748098587 4....

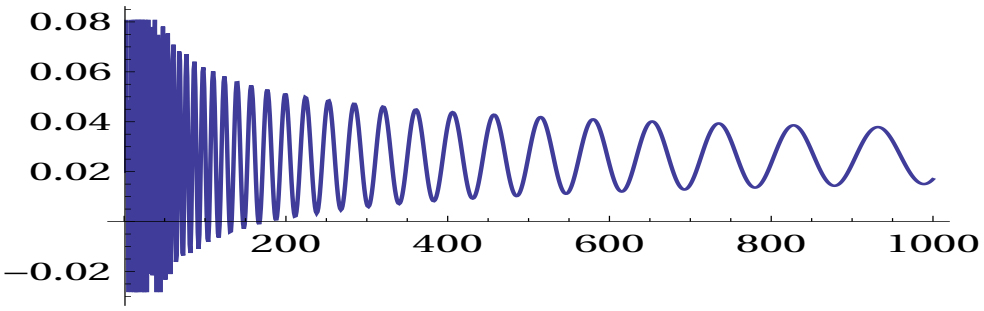


[10000]=0.0034739734404261226469
[100000]=-0.0009736503195389328066
[1000000]=0.0000840864838235658814
[10000000]=-0.0000402288186734236711
[100000000]=-0.0000791109926 464973008
converge to 0.

(52.9703+ 0.01=52.9803)

$$\sum_{n=1}^{1000}[\frac{\cos[(52.9803)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(52.9803)\ln(2n)]}{(2n)^{0.5}}] \tag{45}$$

= -0.025638210257456366874529600147.....

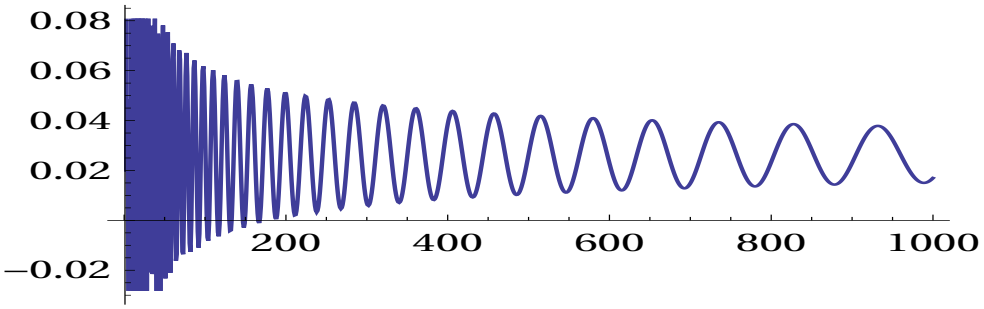


[10000]=0.0298009149632027132981
[100000]=0.0252807368145561497941
[1000000]=0.026454912481786985 8728
[10000000]=0.0262664254861674946462
[100000000]=0.0262518399485283625283
It does not converge to 0.

(56.4462- 0.01=56.4362)

$$\sum_{n=1}^{1000}[\frac{\cos[(52.9603)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(52.9603)\ln(2n)]}{(2n)^{0.5}}] \tag{46}$$

= 0.026613628503627737189719746367 37....

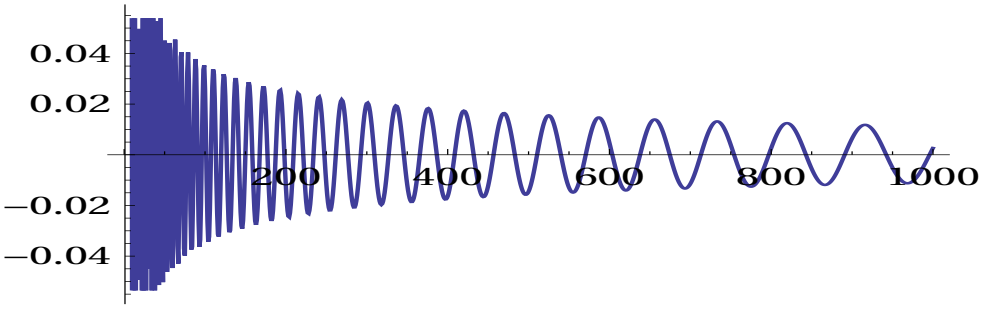


[10000]=0.0215213375849595336953
[100000]=0.0256454199486976612554
[1000000]=0.0250592910221035559959
[10000000]=0.024800539648018208455 1
[100000000]=0.0249269290298672584194
It does not converge to 0.

(56.4462 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(52.9603)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(52.9603)\ln(2n)]}{(2n)^{0.5}}] \tag{47}$$

= 0.0026518413102086547400105492968 8....

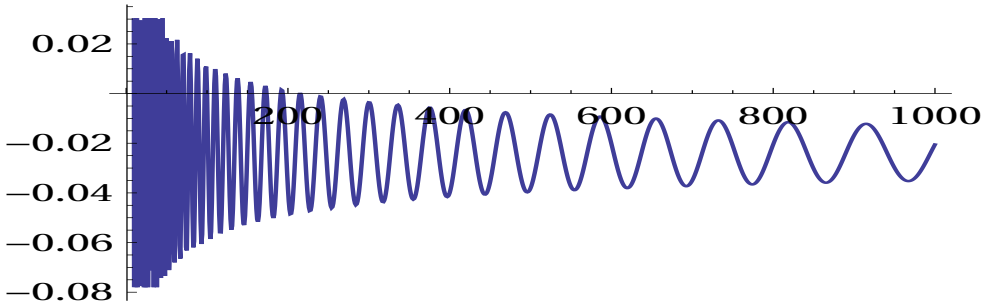


[10000]=-0.0033569416558486631433
[100000)=0.0007412009666034661236
[1000000]=0.0003082564029241538104
[10000000]=0.0000061648527900334994
[100000000]=0.0001245625213175247570
converge to 0.

(56.4462+ 0.01=56.4562)

$$\sum_{n=1}^{1000}[\frac{\cos[(56.4562)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(56.4562)\ln(2n)]}{(2n)^{0.5}}] \tag{48}$$

= -0.020518507917862853064414308975874....

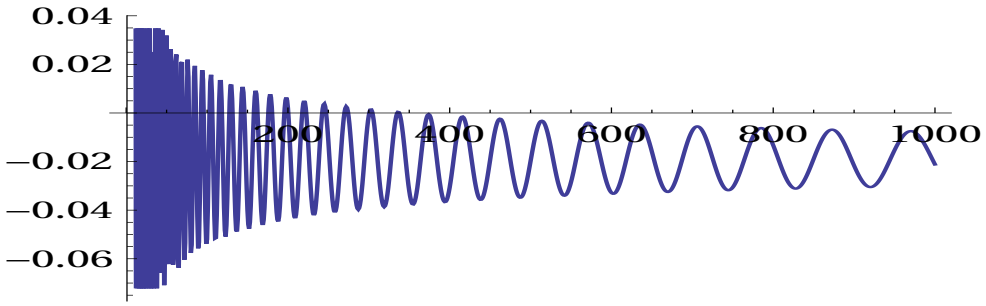


[10000]=-0.0273951025018738907046
[100000]=-0.0233662356193842200847
[1000000]=-0.0236407303330016561882
[10000000]=-0.023979022711144104551 6
[100000000]=-0.0238720224947596565412
It does not converge to 0.

(59.3470 -0.01=59.3370)

$$\sum_{n=1}^{1000}[\frac{\cos[(59.337)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(59.337)\ln(2n)]}{(2n)^{0.5}}] \tag{49}$$

= -0.021175444078681470090466446598 13....

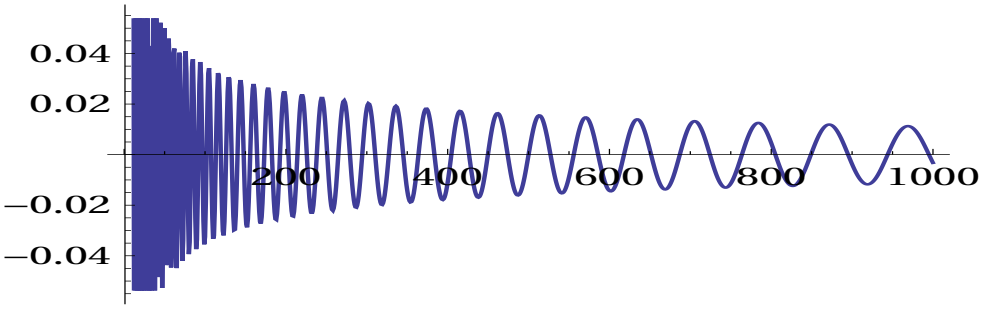


[10000]=-0.015347093530164262337 2
[100000]=-0.018683234503513303920 2
[1000000]=-0.019185109246576837610 5
[10000000]=-0.018841620725952832465 8
[100000000]=-0.018798136991556874814 1
It does not converge to 0.

(59.3470 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(59.347)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(59.347)\ln(2n)]}{(2n)^{0.5}}] \tag{50}$$

= -0.00324939742781742625729703192 8....

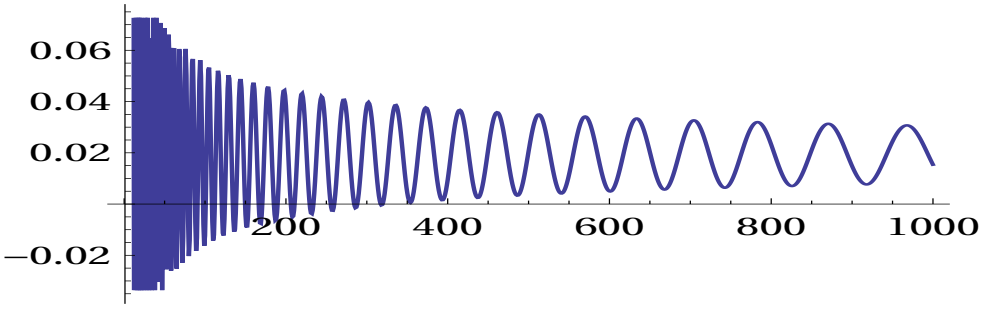


[10000]=0.003327203799621429 7653
[100000]=0.000199994467626276 7817
[1000000]=-0.000426663786490786 4286
[10000000]=-0.000110711072618528 7755
[100000000]=-0.000049612187917536 4362
converge to 0.

(59.3470 +0.01=59.3570)

$$\sum_{n=1}^{1000}[\frac{\cos[(59.357)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{cos[(59.357)\ln(2n)]}{(2n)^{0.5}}] \tag{51}$$

= 0.015367463727157590145364138880 9426....

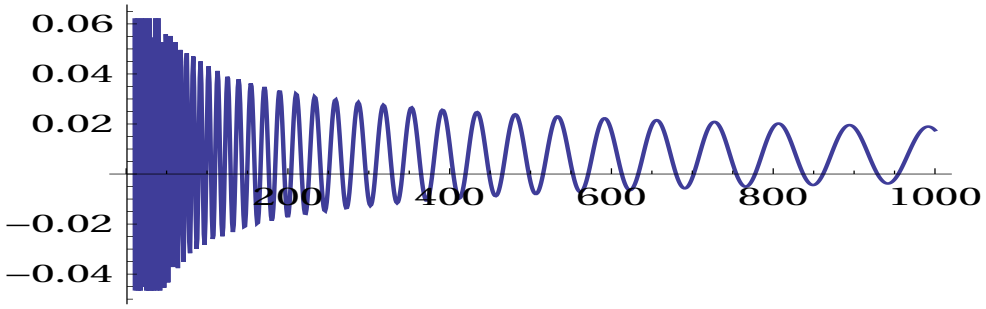


[10000]=0.022640605980271066 8549
[100000]=0.019751531911313520 4288
[1000000]=0.019011516493472220 5570
[10000000]=0.019293485995044584 0304
[100000000]=0.019370194331578965 9739
It does not converge to 0.

(60.8318 -0.01=60.8218)

$$\sum_{n=1}^{1000}[\frac{\cos[(60.8218)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(60.8218)\ln(2n)]}{(2n)^{0.5}}] \tag{52}$$

= 0.017535560535969578881737935277711....

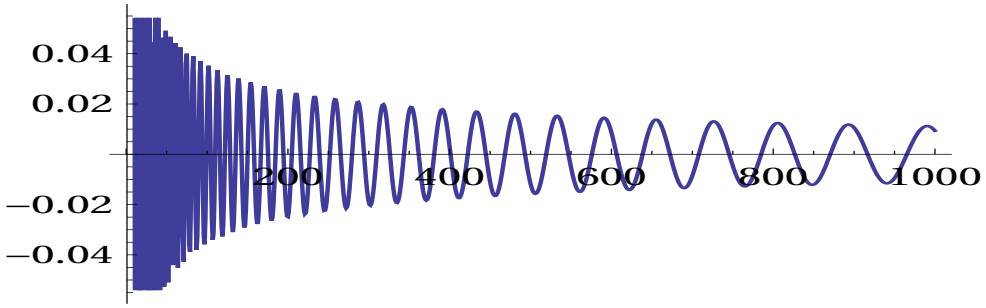


[10000]=0.0053634168996513102365
[100000]=0.007109729055579180371
[1000000]=0.008065613745953006952 2
[10000000]=0.007743853421453376732 8
[100000000]=0.007697906272385283618 6
It does not converge to 0.

(60.8318 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(60.8318)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(60.8318)\ln(2n)]}{(2n)^{0.5}}] \tag{53}$$

= 0.009350453395631120028330356599623 20....

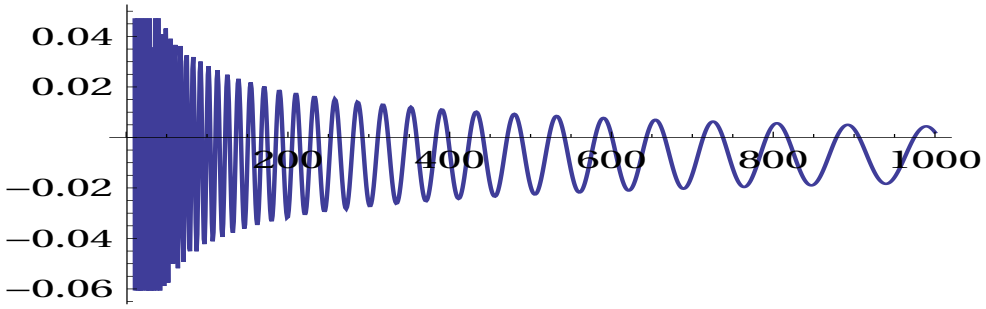


[10000]=-0.002632948991069503780 2
[100000]=-0.000521142704765876346 7
[1000000]=0.000330865068159751996 4
[10000000]=-0.000023450436757911728 7
[100000000]=-0.000048997914684330717 3
converge to 0.

(60.8318 +0.01=60.8418)

$$\sum_{n=1}^{1000}[\frac{\cos[(60.8418)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(60.8418)\ln(2n)]}{(2n)^{0.5}}] \tag{54}$$

= 0.00203403248728673701597324233170631 80....

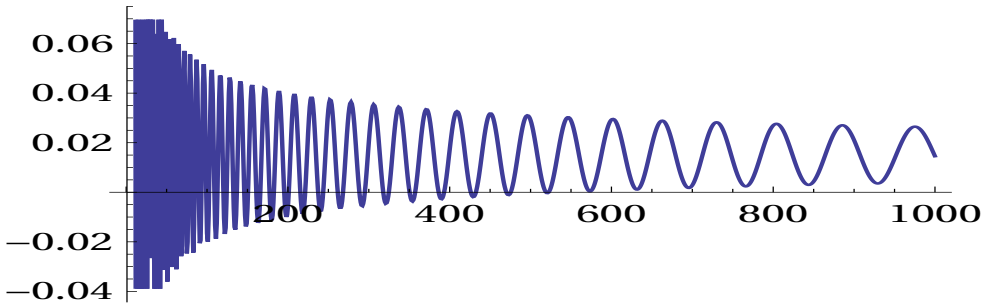


[10000]=-0.009680890296109556 3006
[100000]=-0.007221717396379519 3783
[1000000]=-0.006488389888411534 2315
[10000000]=-0.006867759299354036 5410
[100000000]=-0.006871912484246664 4543
It does not converge to 0.

(65.1125 -0.01=65.1025)

$$\sum_{n=1}^{1000}[\frac{\cos[(65.1025)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(65.1025)\ln(2n)]}{(2n)^{0.5}}] \tag{55}$$

= 0.01455354766716725850019791519965069408....

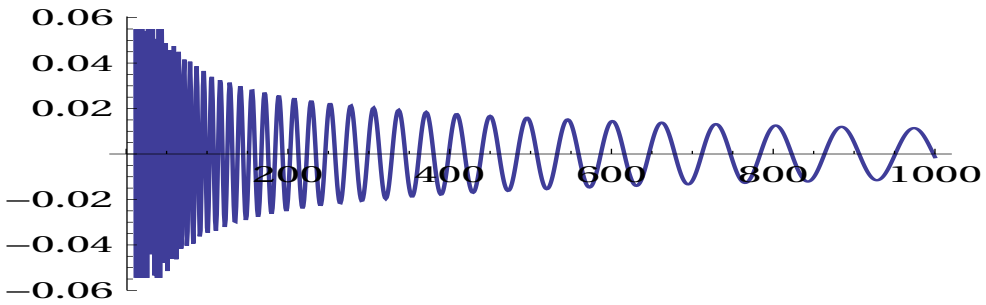


[10000]=0.017813066213943299 5039
[100000]=0.016248499294891100 7027
[1000000]=0.015317831629496304 5435
[10000000]=0.015105301227293184 0715
[100000000]=0.015114015191075687 9994
It does not converge to 0.

(65.1125 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(65.1125)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(65.1125)\ln(2n)]}{(2n)^{0.5}}] \tag{56}$$

= -0.0013760257837058265259987472825....

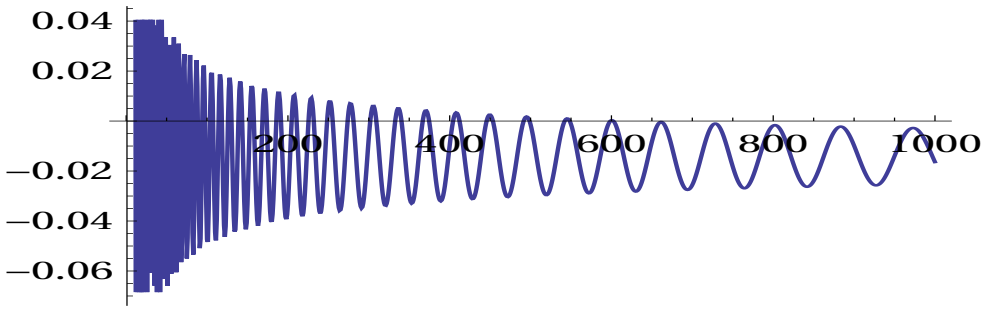


[10000]=0.0024868485483015901651
[100000]=0.0011808038497076905112
[1000000]=0.0002774053647495089620
[10000000]=0.0000397292122541242009
[100000000]=0.0000330684738521100997
converge to 0.

(65.1125 +0.01=65.1225)

$$\sum_{n=1}^{1000}[\frac{\cos[(65.1225)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(65.1225)\ln(2n)]}{(2n)^{0.5}}] \tag{57}$$

= -0.016393718890422239775885440360255 66....

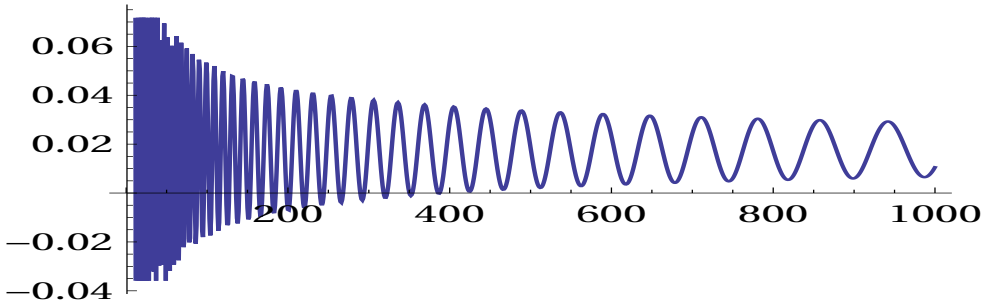


[10000]=-0.0119595467599865334929
[100000]=-0.0129999415740921740736
[1000000]=-0.0138639340077547287833
[10000000]=-0.0141215839941903811144
[100000000]=-0.0141431734096021752972
It does not converge to 0.

(67.0798 -0.01=67.0698)

$$\sum_{n=1}^{1000}[\frac{\cos[(67.0698)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(67.0698)\ln(2n)]}{(2n)^{0.5}}] \tag{58}$$

= 0.010543401012985978748273709953560 65....

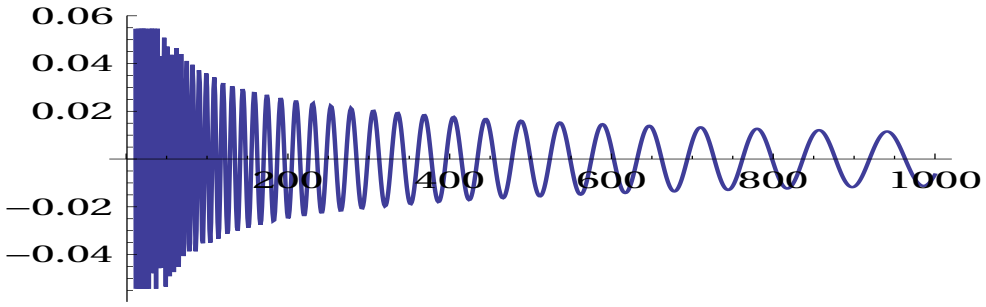


[10000]=0.0185272576419921730650
[100000]=0.0180575446703839549711
[1000000]=0.017508793629079540 1217
[10000000]=0.017861520962904435 5277
[100000000]=0.017720166217365551 6419
It does not converge to 0.

(67.0798 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(67.0798)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(67.0798)\ln(2n)]}{(2n)^{0.5}}] \tag{59}$$

= -0.006523754229361230117729034342 5925....

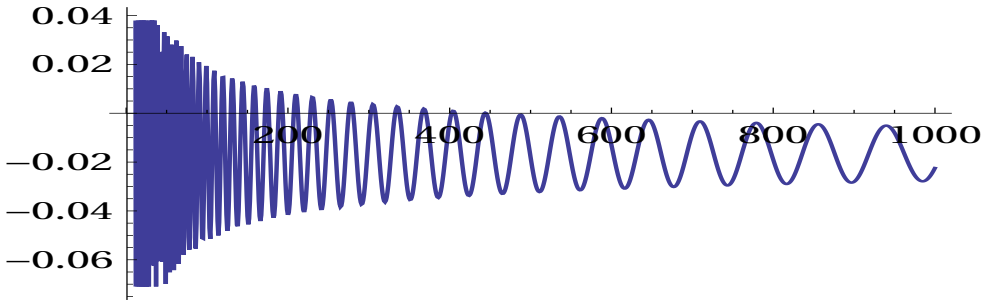


[10000]=0.0004455620242284032877
[100000]=0.0004495504034751115607
[1000000]=-0.0002621111366443582480
[10000000]=0.0001288477260946204589
[100000000]=-0.0000147163868139592400
converge to 0.

(67.0798 +0.01=67.0898)

$$\sum_{n=1}^{1000}[\frac{\cos[(67.0898)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(67.0898)\ln(2n)]}{(2n)^{0.5}}] \tag{60}$$

= -0.022435645618969822822622562110867639....

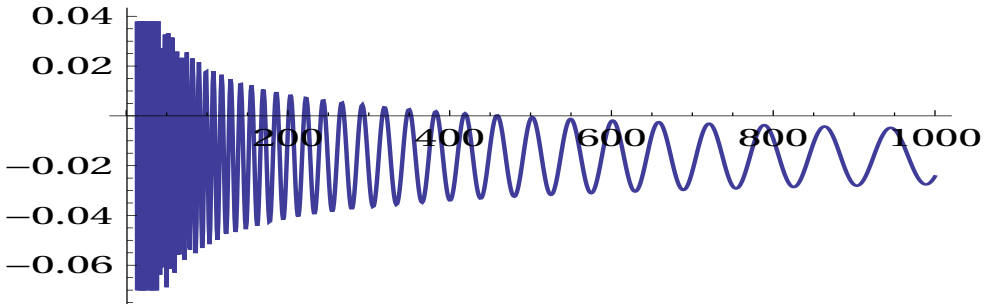


[10000]=-0.0165228379532093849758
[100000]=-0.0160473792921948035795
[1000000]=-0.0169096431198623928238
[10000000]=-0.0164894634928593915302
[100000000]=-0.0166309192179651989252
It does not converge to 0.

(69.5464 -0.01= 69.5364)

$$\sum_{n=1}^{1000}[\frac{\cos[(69.5364)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(69.5364)\ln(2n)]}{(2n)^{0.5}}] \tag{61}$$

= -0.024329757796205405956618433175730325 9....

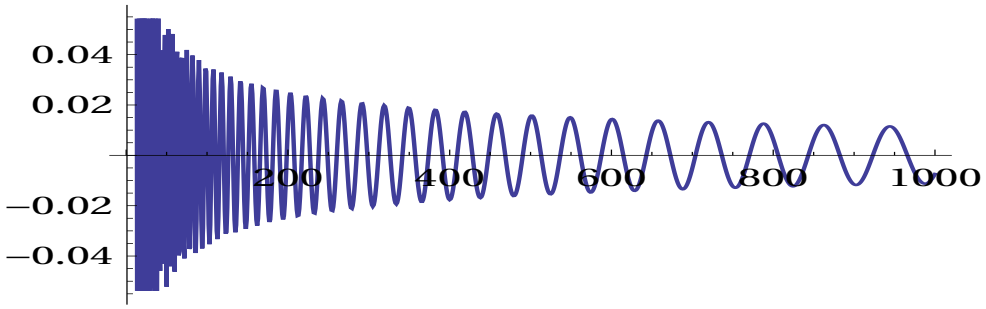


[10000]=-0.013473479241616180 1992
[100000]=-0.017257898558009011 2084
[1000000]=-0.015975377063139305 2226
[10000000]=-0.016403048592062957 6224
[100000000]=-0.016262394787241944 7047
It does not converge to 0.

(69.5464 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(69.5464)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(69.5464)\ln(2n)]}{(2n)^{0.5}}] \tag{62}$$

= -0.0074219498186825133410879048807515 3....

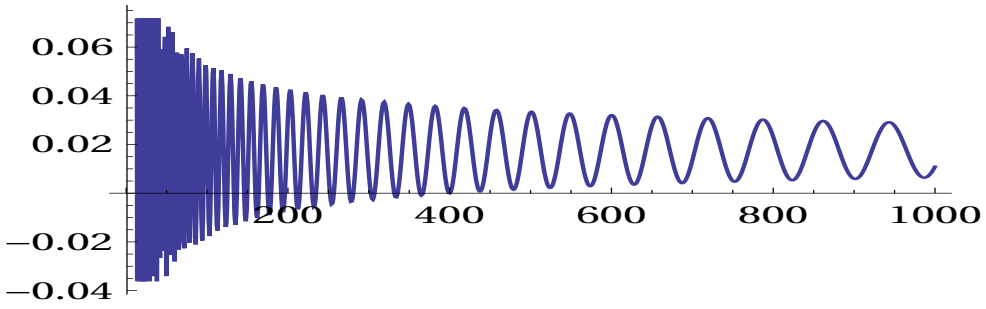


[10000]=0.0025963455525007681293
[100000)=-0.000887121136705024 0836
[1000000]=0.0002940474711544655657
[10000000]=-0.0001016062203650079822
[100000000]=0.0000296025170157569742
converge to 0.

(69.5464 +0.01=69.5564)

$$\sum_{n=1}^{1000}[\frac{\cos[(69.5564)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(69.5564)\ln(2n)]}{(2n)^{0.5}}] \tag{63}$$

= 0.0108678048291616032038531048821372 22....

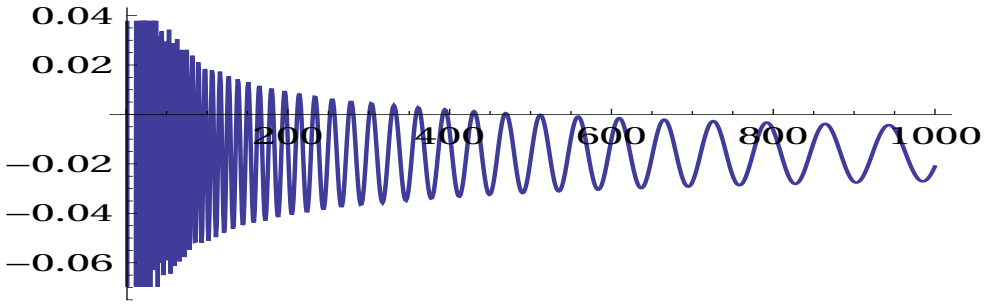


[10000]=0.0199797996968321539546
[100000]=0.0168359155842571633910
[1000000]=0.0178963339534679265197
[10000000]=0.0175417209470739889066
[100000000]=0.0176595177076413131778
It does not converge to 0.

(72.0672 -0.01=72.0572)

$$\sum_{n=1}^{1000}[\frac{\cos[(72.0572)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(72.0572)\ln(2n)]}{(2n)^{0.5}}] \tag{64}$$

= -0.021074303355164701436494140152279 6....

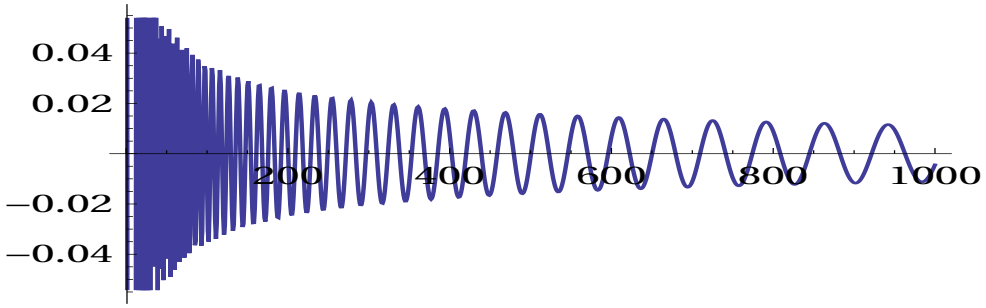


[10000]=-0.012671377532791149 0343
[100000]=-0.016922076005184229 2193
[1000000]=-0.015539767387209819 2327
[10000000]=-0.015842504924397642 0743
[100000000]=-0.015821272960497959 7531
It does not converge to 0.

(72.0672 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(72.0672)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(72.0672)\ln(2n)]}{(2n)^{0.5}}] \tag{65}$$

= -0.004433077941905571139525695057394011....

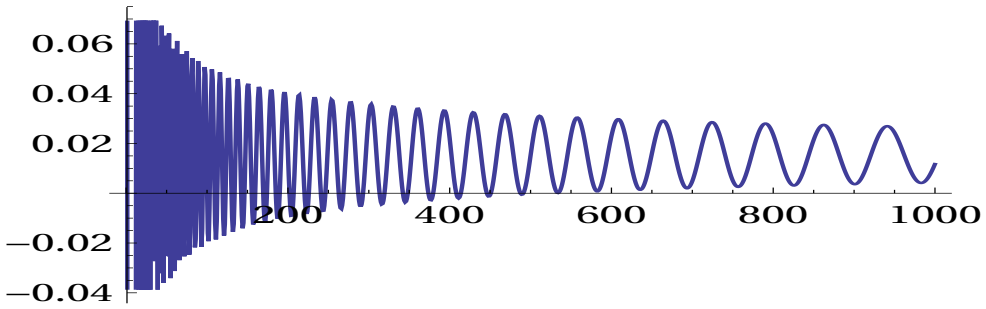


[10000]=0.003029428532427709 8019
[100000]=-0.001051853518954409 7729
[1000000]=0.000367145681441155 1135
[10000000]=0.000016945560383392 2448
[100000000]=0.000062280204802060 2324
converge to 0.

(72.0672 +0.01=72.0772)

$$\sum_{n=1}^{1000}[\frac{\cos[(72.0672)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(72.0672)\ln(2n)]}{(2n)^{0.5}}] \tag{66}$$

= 0.011703636767921699052293328063332 32....

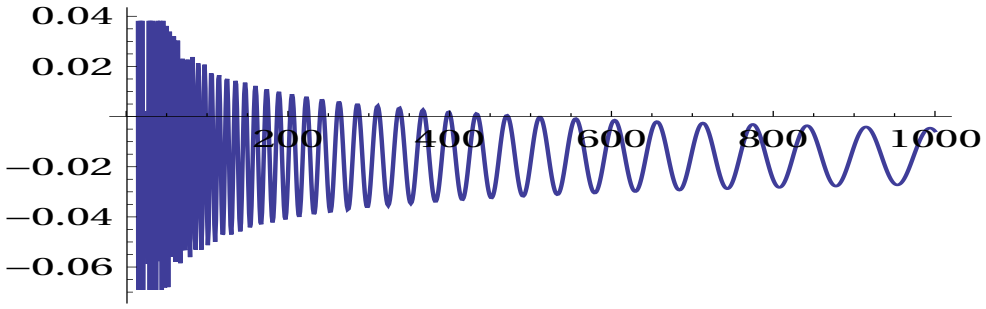


[10000]=0.0181707007646028824432
[100000=0.0143045111219020221194
[1000000]=0.0157372394547144987820
[10000000]=0.0153472886281138462539
[100000000]=0.0154154791762151199136
It does not converge to 0.

(75.7047 -0.01=75.6947)

$$\sum_{n=1}^{1000}[\frac{\cos[(75.6947)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(75.6947)\ln(2n)]}{(2n)^{0.5}}] \tag{67}$$

= -0.00576760204027519488805679558320662673515 9....

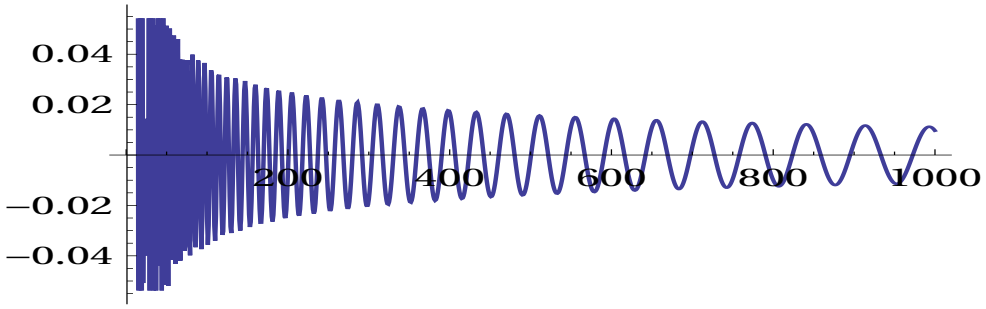


[10000]=-0.0145183117659648756176
[100000]=-0.0168743137361940659380
[1000000]=-0.0158932270594019514620
[10000000]=-0.0156984831255221751745
[100000000]=-0.0158045871196352515076
It does not converge to 0.

(75.7047 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(75.7047)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{cos[(75.7047)\ln(2n)]}{(2n)^{0.5}}] \tag{68}$$

= 0.009653628012110042231224261630636 38....

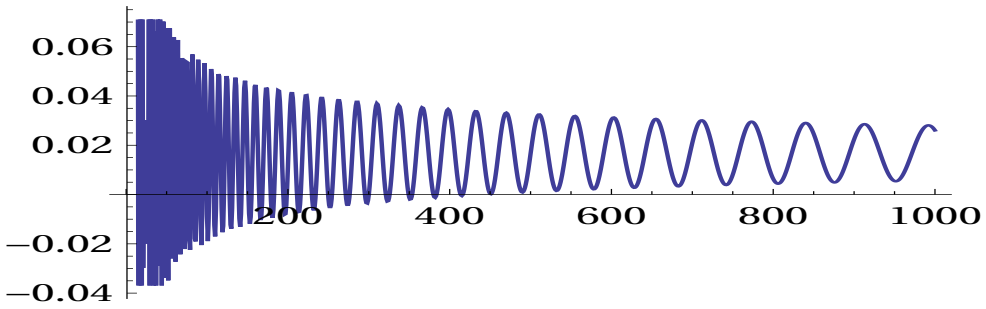


[10000]=0.0016245600108993024473
[100000]=-0.0010015153125604158314
[1000000]=-0.000118229051365751234 2
[10000000]=0.000120408434666621235 2
[100000000]=0.000025751718977342784 9
converge to 0.

(75.7047 +0.01=75.7147)

$$\sum_{n=1}^{1000}[\frac{\cos[(75.7147)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(75.7147)\ln(2n)]}{(2n)^{0.5}}] \tag{69}$$

= 0.026037579154504191831522494048690 49....

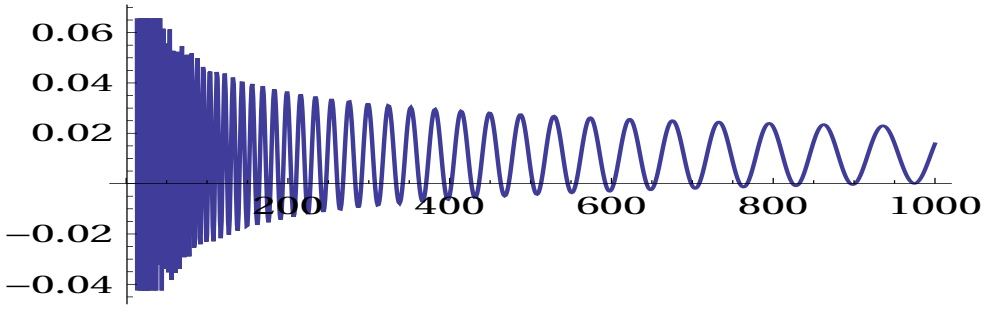


[10000]=0.0187700429043501960946
[100000]=0.0159047949088703503839
[1000000]=0.0166779554338473551267
[10000000]=0.0169547162854766578222
[100000000]=0.0168740888732249530446
It does not converge to 0.

(77.1448 -0.01=77.1348)

$$\sum_{n=1}^{1000}[\frac{\cos[(77.1348)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(77.1348)\ln(2n)]}{(2n)^{0.5}}] \tag{70}$$

= 0.01583745539074428146647286370734127500....

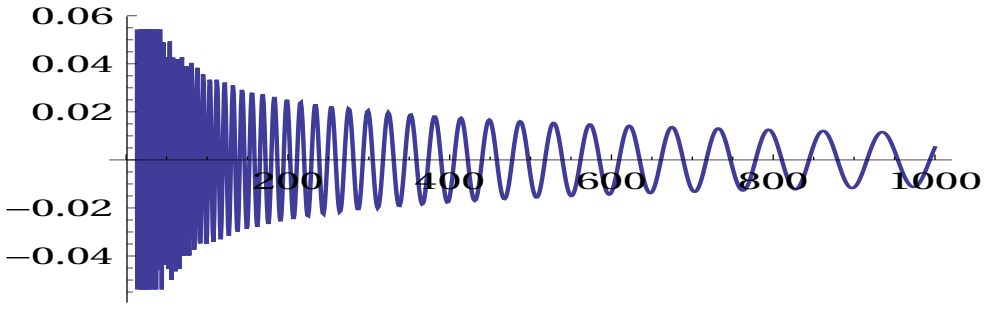


[10000]=0.014523404125611844017 7
[100000]=0.010781116870762039172 7
[1000000]=0.011151220679815243910 8
[10000000]=0.011500198938312484672 8
[100000000]=0.011439096084972776371 0
It does not converge to 0.

(77.1448 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(77.1448)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(77.1448)\ln(2n)]}{(2n)^{0.5}}] \tag{71}$$

= 0.00523002765127211575565718437650 4....

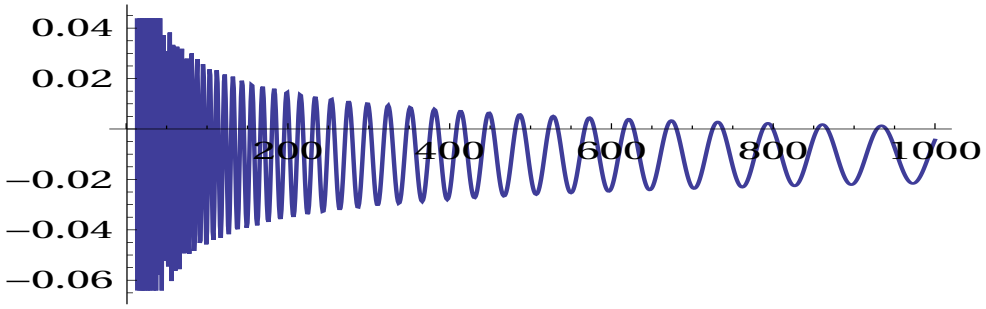


[10000]=0.002966477995302037751 9
[100000]=-0.000700616635427129793 1
[1000000]=-0.000187041972646696677 9
[10000000]=0.000137140392068110512 7
[100000000]=0.000058715472979412101 9
converge to 0.

(77.1448 +0.01=77.1548)

$$\sum_{n=1}^{1000}[\frac{\cos[(77.1548)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(77.1548)\ln(2n)]}{(2n)^{0.5}}] \tag{72}$$

= -0.00436086098127121124939078745425 57....

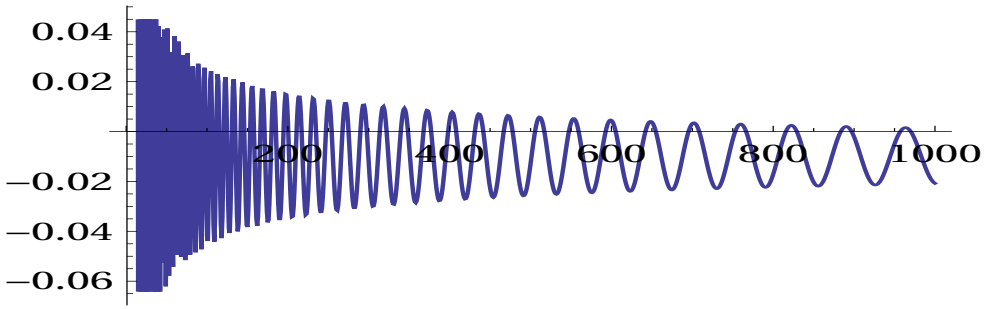


[10000]=-0.0075726021271640304999
[100000]=-0.011124786479812000 2505
[1000000]=-0.010473969326010057 1320
[10000000]=-0.010182067599665363 7468
It does not converge to 0.

(79.3374 -0.01=79.3274)

$$\sum_{n=1}^{1000}[\frac{\cos[(79.3274)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(79.3274)\ln(2n)]}{(2n)^{0.5}}] \tag{73}$$

= -0.020765131520757443549077121090537 46....

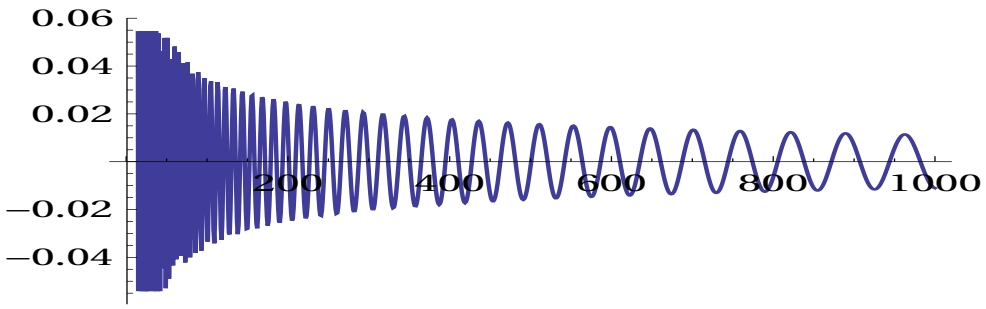


[10000]=0.008175755031177062 4957
[100000]=0.010717880514020478 0333
[1000000]=0.011344641491091107 8100
[10000000]=0.011439670686156555 9260
[100000000]=0.011429960917647849 4943
It does not converge to 0.

(79.3374 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(79.3374)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(79.3374)\ln(2n)]}{(2n)^{0.5}}] \tag{74}$$

= -0.011060118603004843147391183899044 21....

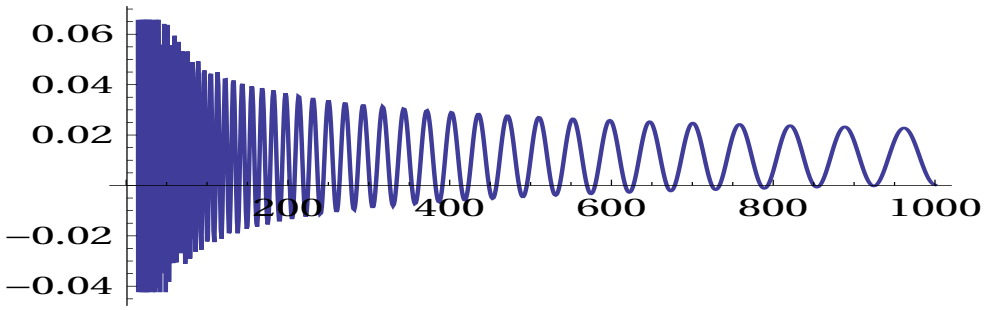


[10000]=-0.0033286483613430535924
[100000]=-0.0007622145135349513156
[1000000]=-0.0000828611800183551403
[10000000]=0.0000436829234382010275
[100000000]=0.0000471368163292867377
converge to 0.

(79.3374 +0.01=79.3474)

$$\sum_{n=1}^{1000}[\frac{\cos[(79.3474)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(79.3474)\ln(2n)]}{(2n)^{0.5}}] \tag{75}$$

= 0.000239472792792690622654945101468 2763....

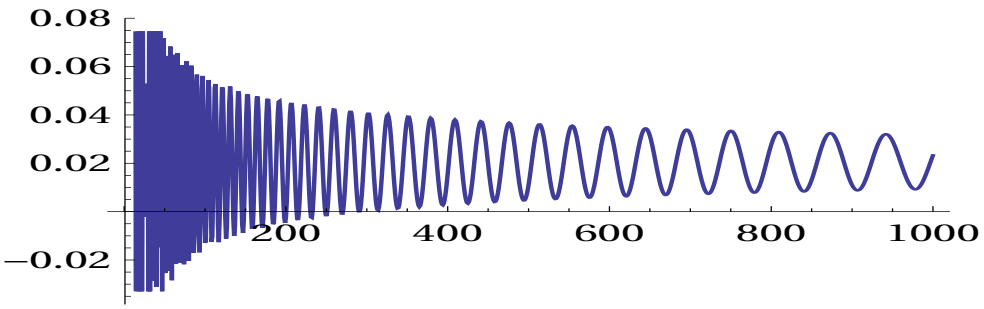


[10000]=0.008175755031177062 4957
[100000]=0.010717880514020478 0333
[1000000]=0.011344641491091107 8100
[10000000]=0.011439670686156555 9260
[100000000]=0.011429960917647849 4943
It does not converge to 0.

(82.9104 -0.01=82.9004)

$$\sum_{n=1}^{1000}[\frac{\cos[(82.9004)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(82.9004)\ln(2n)]}{(2n)^{0.5}}] \tag{76}$$

= 0.023282073861962337559387459755070270....

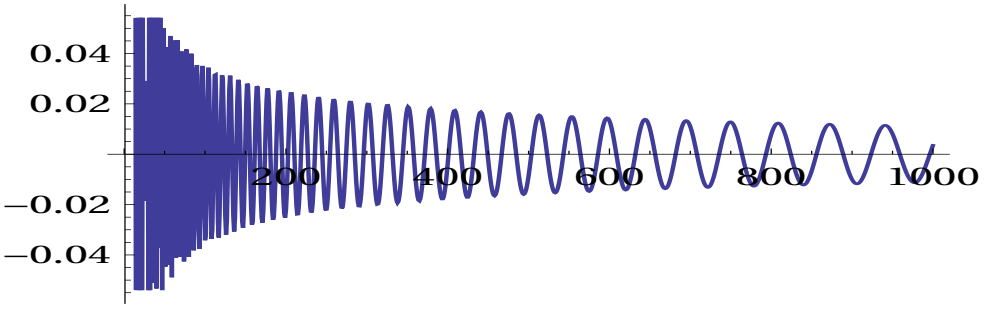


[10000]=0.0222846263592452326074
[100000]=0.0194543229123889487020
[1000000]=0.0208411982389801672677
[10000000]=0.0204842003462149778448
[100000000]=0.0205104126644407684654
It does not converge to 0.

(82.9104 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(82.9104)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(82.9104)\ln(2n)]}{(2n)^{0.5}}] \tag{77}$$

= 0.003534455886989732993089041177903 51....

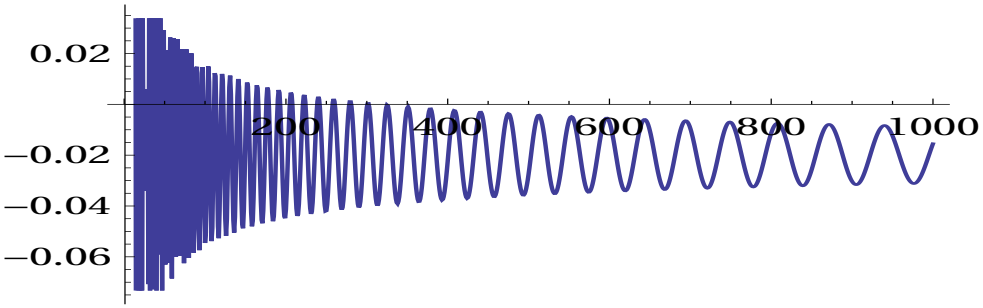


[10000]=0.0014103623601796036642
[100000=-0.0010605598122671972775
[1000000)=0.0002978867961682382442
[10000000]=-0.0000952393762674968021
[100000000]=-0.0000456358162302138902
converge to 0.

(82.9104 +0.01=82.9204)

$$\sum_{n=1}^{1000}[\frac{\cos[(82.9204)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(82.9204)\ln(2n)]}{(2n)^{0.5}}] \tag{78}$$

= -0.01548996349106622583890468134979 56....

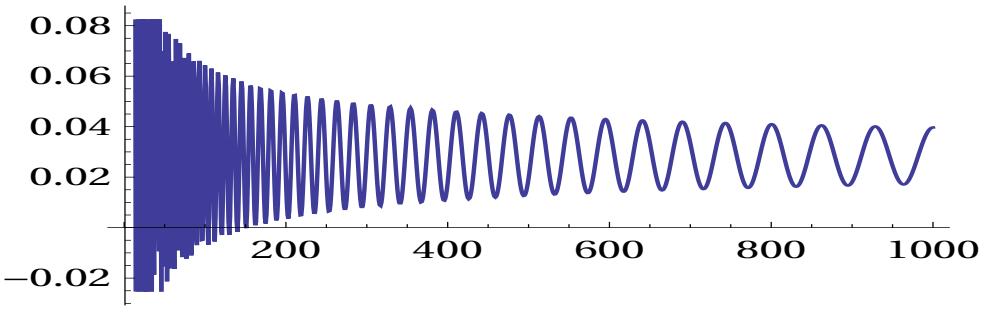


[10000]=-0.0187342688547805988342
[100000=-0.0208164032433105182507
[1000000]=-0.0195086635481445599960
[10000000]=-0.0199292508559919707978
It does not converge to 0.

(84.7355 -0.01=84.7255)

$$\sum_{n=1}^{1000}[\frac{\cos[(84.7255)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(84.7255)\ln(2n)]}{(2n)^{0.5}}] \tag{79}$$

= 0.039664573391102825695554677466757050 4....

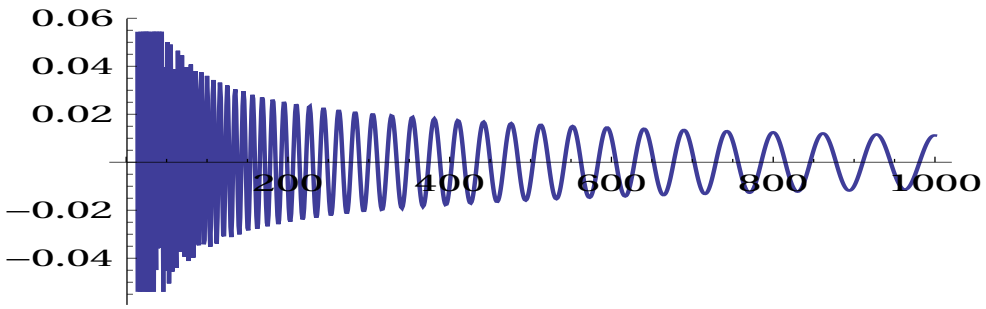


[10000]=0.0318872204225595853866
[100000]=0.0294184557494009089884
[1000000]=0.028706762929072458 1070
[10000000]=0.0285249567043578157455
[100000000]=0.0284865943793785082738
It does not converge to 0.

(84.7355 is nontrivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(84.7355)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(84.7355)\ln(2n)]}{(2n)^{0.5}}] \tag{80}$$

= 0.011141051602656429937878753987726 57....

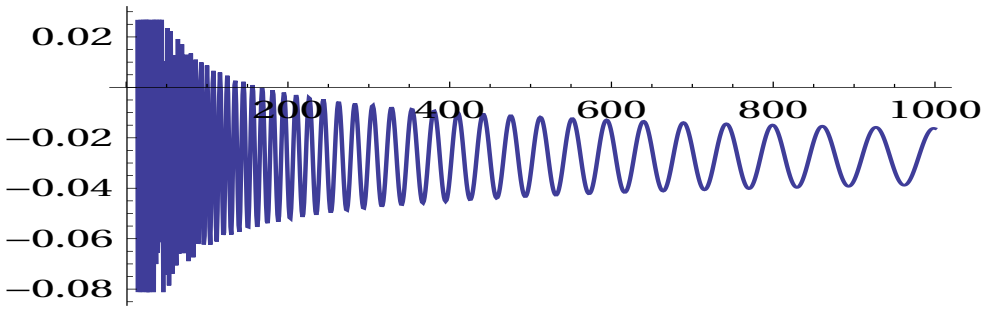


[10000]=0.0032716683727916544625
[100000]=0.0008326779381843932206
[1000000]=0.0001606701190157385807
[10000000=0.000002935445276106 3156
[100000000]=-0.000024166465809795 1197
converge to 0.

(84.7355 +0.01=84.7455)

$$\sum_{n=1}^{1000}[\frac{\cos[(84.7455)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(84.7455)\ln(2n)]}{(2n)^{0.5}}] \tag{81}$$

= -0.016345071972293328324883627536856 14....

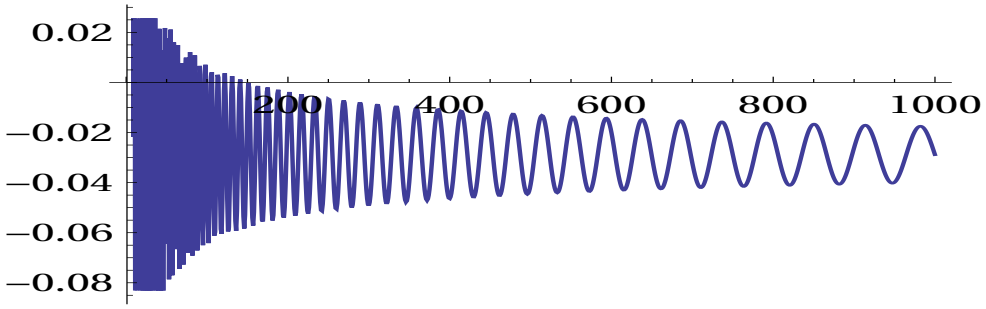


[10000]=-0.0242742873721646205964
[100000]=-0.0266639316485210234320
[1000000]=-0.0272873605024068974223
[10000000]=-0.0274178711569532593262
[100000000]=-0.0274329111587670940176
It does not converge to 0.

(87.4253 -0.01=87.4153)

$$\sum_{n=1}^{1000}[\frac{\cos[(87.4153)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(87.4153)\ln(2n)]}{(2n)^{0.5}}] \tag{82}$$

= -0.028868238867705496470309995403830767....

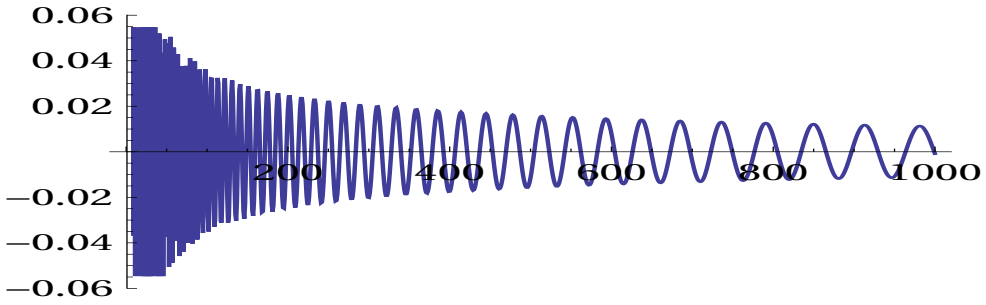


[10000]=-0.0294905492735248811464
[100000]=-0.0292174614920240223459
[1000000]=-0.028967275802245912724 7
[10000000]=-0.028839534921585429500 0
[100000000]=-0.028785678858794714468 6
It does not converge to 0.

(87.4253 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(87.4253)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(87.4253)\ln(2n)]}{(2n)^{0.5}}] \tag{83}$$

= -0.000888581487385396828231414782262693 7....

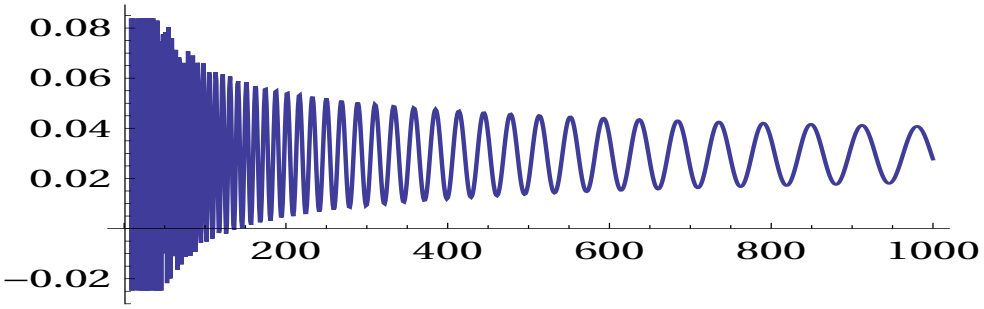


[10000]= -0.0010004497393000491741
[100000]= -0.0005095242227744967893
[1000000]= -0.0001774559399960536792
[10000000]= -0.0000220674631672737237
converge to 0.

(87.4253 +0.01=87.4353)

$$\sum_{n=1}^{1000}[\frac{\cos[(87.4353)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(87.4353)\ln(2n)]}{(2n)^{0.5}}] \tag{84}$$

= 0.027704474845898808913038184191403 28....

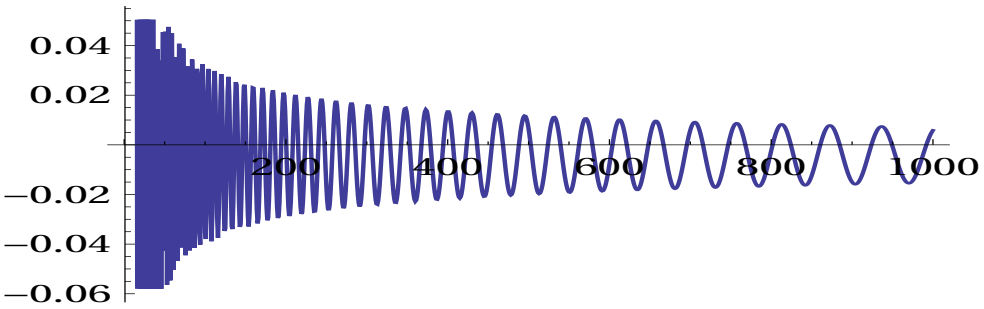


[10000]=0.0281080194080228738807
[100000]=0.0288149360292453242394
[1000000]=0.0292254876163264634692
[10000000]=0.029405948267388945516 2
[100000000]=0.029475049671367374581 9
It does not converge to 0.

(88.8091 -0.01=88.7991)

$$\sum_{n=1}^{1000}[\frac{\cos[(88.7991)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(88.7991)\ln(2n)]}{(2n)^{0.5}}] \tag{85}$$

= 0.005852530275833069866886810620228 43....

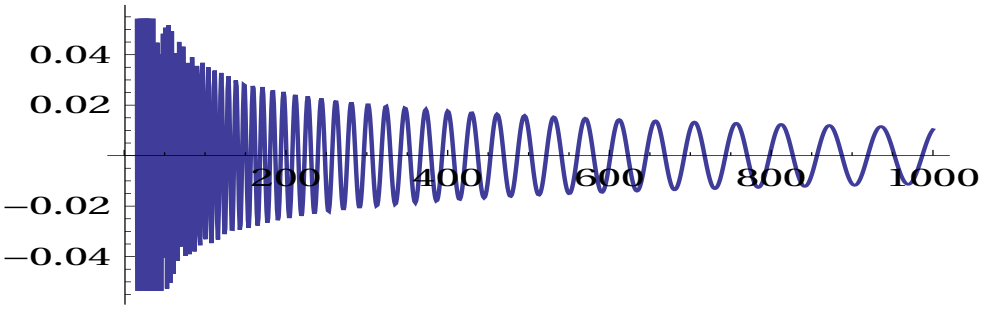


[10000]=-0.0075802629627276293250
[100000]=-0.0030150819828270061622
[1000000]=-0.0044697337538711374300
[10000000]=-0.0040379390189374331568
[100000000]=-0.0041561060838526033695
It does not converge to 0.

(88.8091 is non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(88.8091)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(88.8091)\ln(2n)]}{(2n)^{0.5}}] \tag{86}$$

= 0.010332897078108266898011530774962 8....

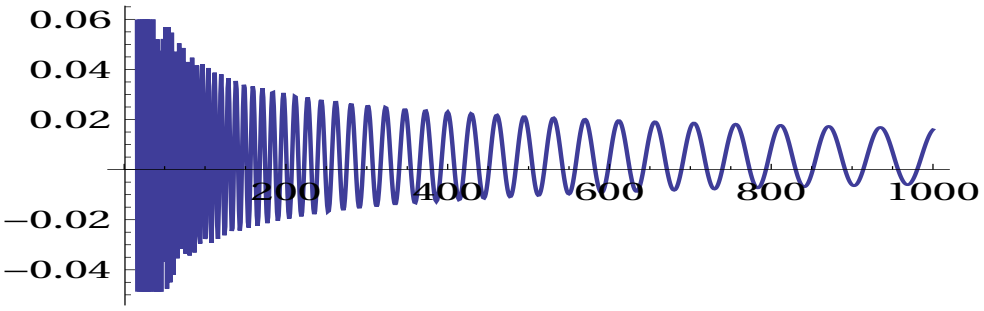


[10000]= -0.0035136809338557582760
[100000]= 0.0010982711272328137507
[1000000]= -0.0003239705664555260706
[10000000]= 0.0000776637060144497345
[100000000]= -0.0000237365082598473473
converge to 0.

(88.8091 +0.01=88.8191)

$$\sum_{n=1}^{1000}[\frac{\cos[(88.8191)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(88.8191)\ln(2n)]}{(2n)^{0.5}}] \tag{87}$$

= 0.015934932837522983487256100774298 99....

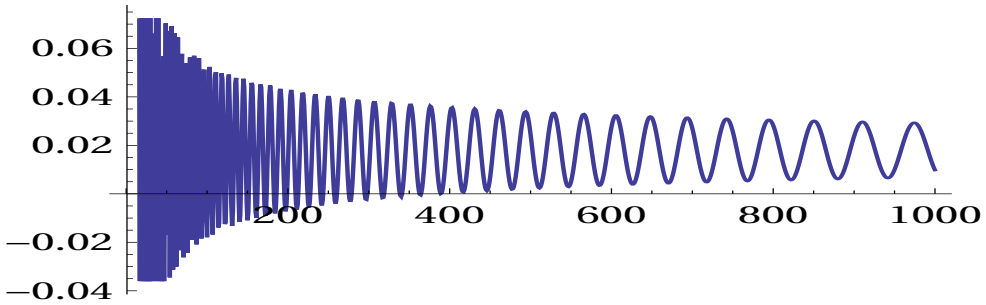


[10000]=0.0017686547806949515400
[100000]=0.0063765745429264107311
[1000000]=0.0050098608074647396973
[10000000]=0.0053722992267073851544
[100000000]=0.0052906766583897986422
It does not converge to 0.

(92.4919 -0.01=92.4819)

$$\sum_{n=1}^{1000}[\frac{\cos[(92.4819)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(92.4819)\ln(2n)]}{(2n)^{0.5}}] \tag{88}$$

= 0.009801967430046798170297271086259106 0....

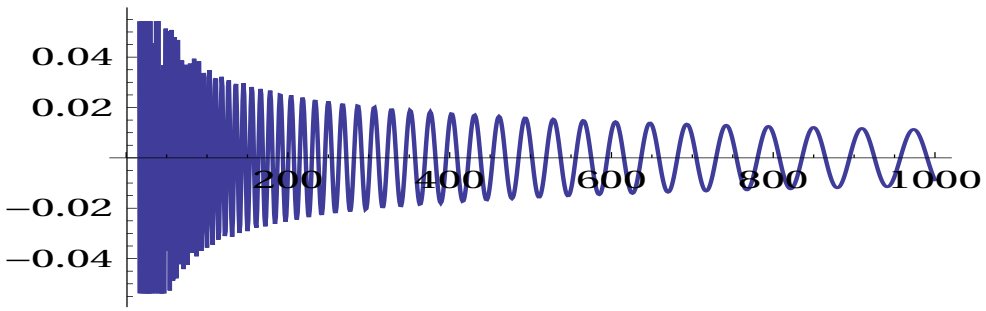


[10000]=0.0175727899371627450942
[100000]=0.0185962823074991082106
[1000000]=0.0183356254448237623866
[10000000]=0.0181058644958792085145
[100000000]=0.0180190368161497645183
It does not converge to 0.

(92.4919 is nontrivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(92.4919)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(92.4919)\ln(2n)]}{(2n)^{0.5}}] \tag{89}$$

0.008547365010250874501406981302547....

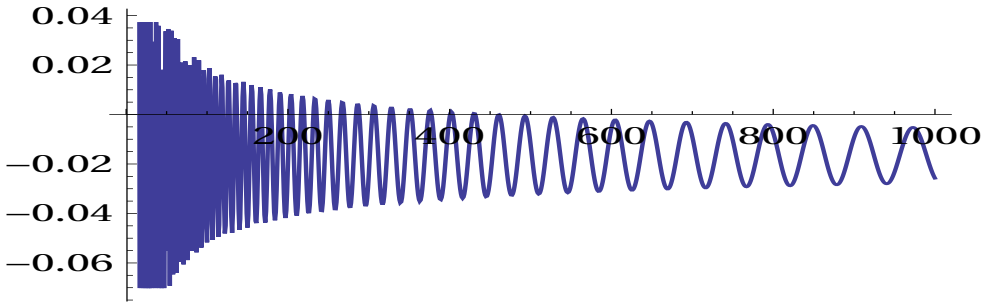


[10000]= -0.000774307696825416932 9
[100000]= 0.000474426204330751335 0
[1000000]= 0.000313430822750708287 2
[10000000]= 0.000108645312223227334 9
[100000000]= 0.000022275923831711084 4
converge to 0.

(92.4919 +0.01=92.5019)

$$\sum_{n=1}^{1000}[\frac{\cos[(92.5019)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(92.5019)\ln(2n)]}{(2n)^{0.5}}] \tag{90}$$

= -0.025769922882814007897222100511552408....

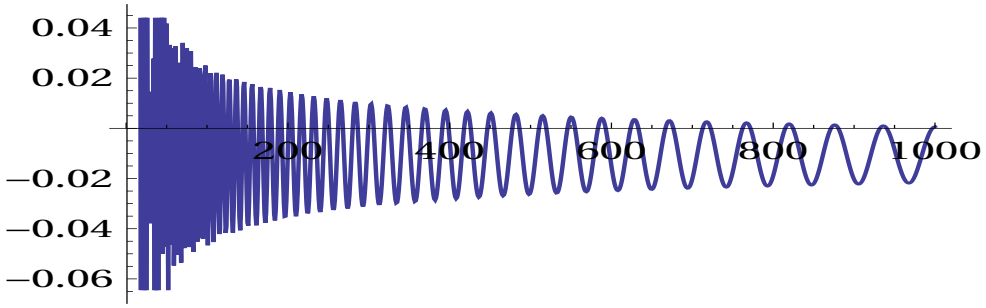


[10000]=-0.0176244246733206419431
[100000]=-0.016165103431012968 4823
[1000000]=-0.0162259716204928086669
[10000000]=-0.0164022678319018025417
[100000000]=-0.0164859373527452453264
It does not converge to 0.

(The axis is 94.6513 -0.01=94.6413)

$$\sum_{n=1}^{1000}[\frac{\cos[(94.6413)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(94.6413)\ln(2n)]}{(2n)^{0.5}}] \tag{91}$$

= 0.000660819168786540468218909859131396....

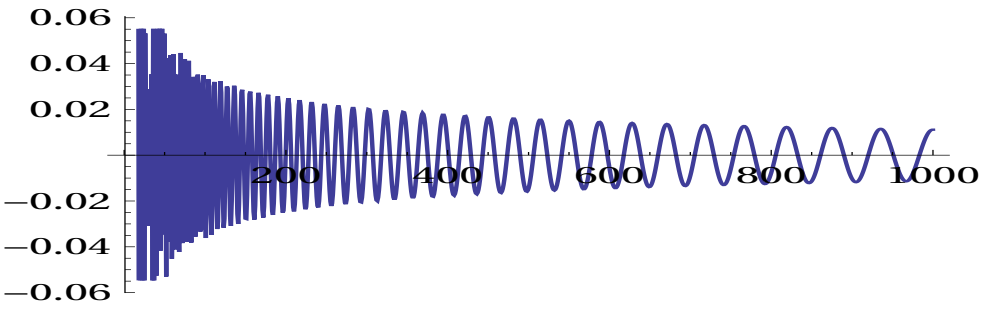


[10000]=-0.0121569785214179423849
[100000)=-0.0112000894592297842861
[1000000]=-0.0101682718652411838156
[10000000]=-0.0105313846942306915677
[100000000]=-0.0105406836417775116865
It does not converge to 0.

(94.6513 is non-trivial zero value as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(94.6513)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(94.6513)\ln(2n)]}{(2n)^{0.5}}] \tag{92}$$

= 0.011127005476330245290336596568709....

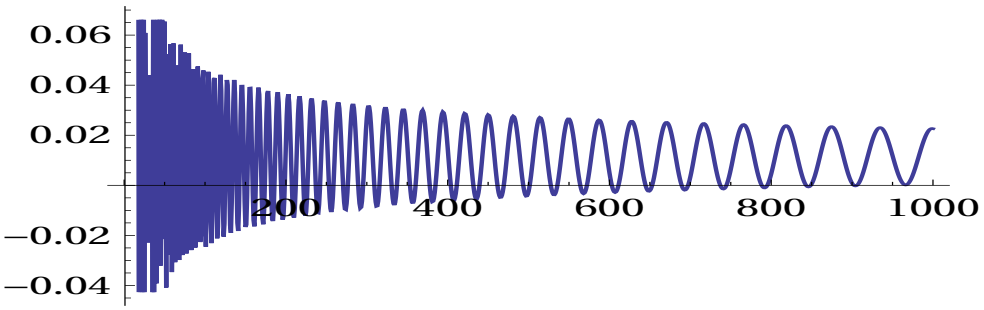


[10000]= -0.0013765254567662944633
[100000]= -0.0008392212363509909913
[1000000]= 0.0002788508501267524431
[10000000]= -0.0000497038044914837129
[100000000]=-0.0000309521760194209424
converge to 0.

(94.6513 +0.01=94.6613)

$$\sum_{n=1}^{1000}[\frac{\cos[(94.6613)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(94.6613)\ln(2n)]}{(2n)^{0.5}}] \tag{93}$$

= 0.022617735064078966033699135792529 5....

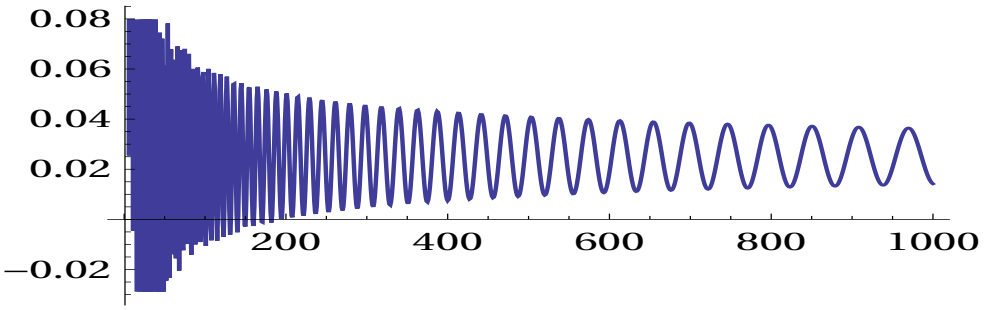


[10000]=0.0105060236444533584843
[100000]=0.0106224946041767430438
[1000000]=0.0118081762350637931719
[10000000]=0.0115210923270080024122
[100000000]=0.0114690425146854717980
not converge

(95.8706 -0.01=95.8606)

$$\sum_{n=1}^{1000}[\frac{\cos[(95.8606)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(95.8606)\ln(2n)]}{(2n)^{0.5}}] \tag{94}$$

= 0.014172631470856970104209633285257 6....

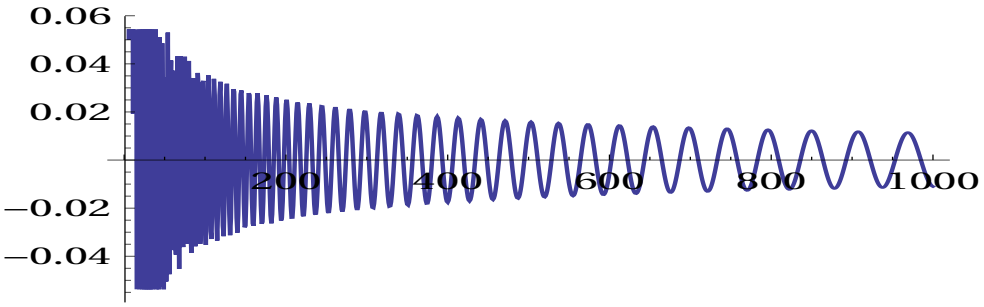


[10000]=0.0222087165335923750198
[100000]=0.0249554363954456182029
[1000000]=0.025350363799162653477 6
[10000000]=0.025246530366994729410 7
[100000000]=0.025162007292592710600 0
It does not converge to 0.

(95.8706 non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(95.8706)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(95.8706)\ln(2n)]}{(2n)^{0.5}}] \tag{95}$$

= -0.011014033824321856717273464621484....

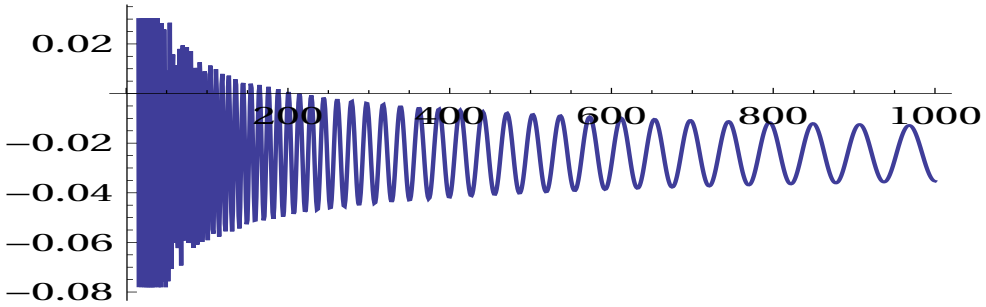


[10000]= -0.002631715544432978917 0
[100000]= 0.000040228325283148637 6
[1000000]= 0.000337773116084501908 1
[10000000]= 0.000195949810939305673 5
[100000000]= 0.000106217408493745139 9
converge to 0.

(95.8706 +0.01=95.8806)

$$\sum_{n=1}^{1000}[\frac{\cos[(95.8806)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(95.8806)\ln(2n)]}{(2n)^{0.5}}] \tag{96}$$

= -0.035334983578964980359492918272530 0....

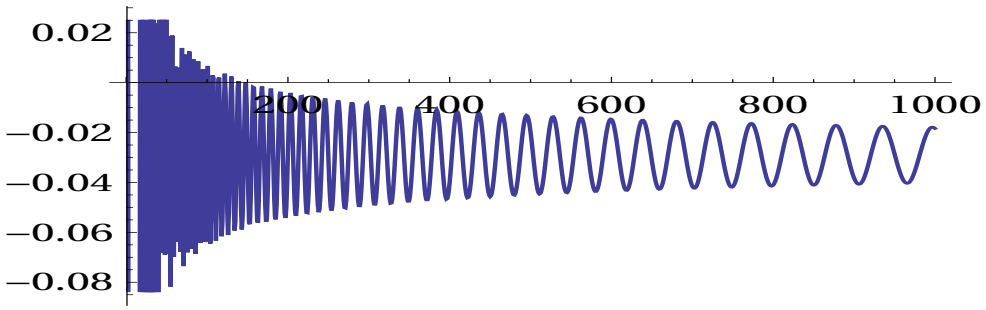


[10000]=-0.026643907435824634 7218
[100000]=-0.024072700062490126 6157
[1000000]=-0.023878519378829655 9725
[10000000]=-0.024056153576930444 6486
[100000000]=-0.024148744806166824 0340
It does not converge to 0.

(98.8312 -0.01=98.8212)

$$\sum_{n=1}^{1000}[\frac{\cos[(98.8212)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(98.8212)\ln(2n)]}{(2n)^{0.5}}] \tag{97}$$

= -0.018367164108921715453400728258162 05....

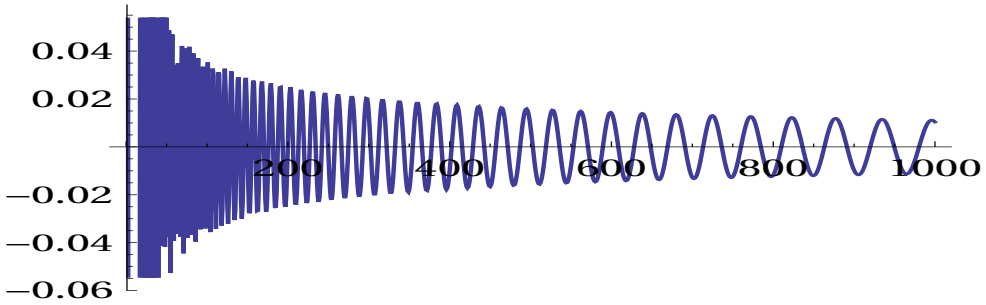


[10000]=-0.029251895550875175 3170
[100000]=-0.030106540742240860 1312
[1000000]=-0.029130683594468499 6975
[10000000]=-0.028908928457808028 0008
[100000000]=-0.028975731146257042 2977
It does not converge to 0.

(98.8312 non-trivial zero value. as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(98.8312)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(98.8312)\ln(2n)]}{(2n)^{0.5}}] \tag{98}$$

= 0.010357636655826298610027886626709537357 74....

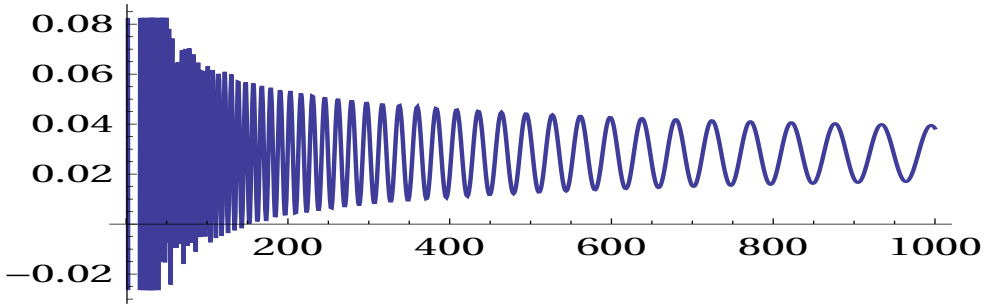


[10000]=-0.0005812758455654100289
[100000]=-0.001100928319077085 2157
[1000000]=-0.000063663092546569 5460
[10000000]=0.000118338623272252 3221
[100000000]=0.000037282120987620 5499
converge to 0.

(98.8312 +0.01=98.8412)

$$\sum_{n=1}^{1000}[\frac{\cos[(98.8412)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(98.8412)\ln(2n)]}{(2n)^{0.5}}] \tag{99}$$

= 0.038336463236695226503961208870407837....

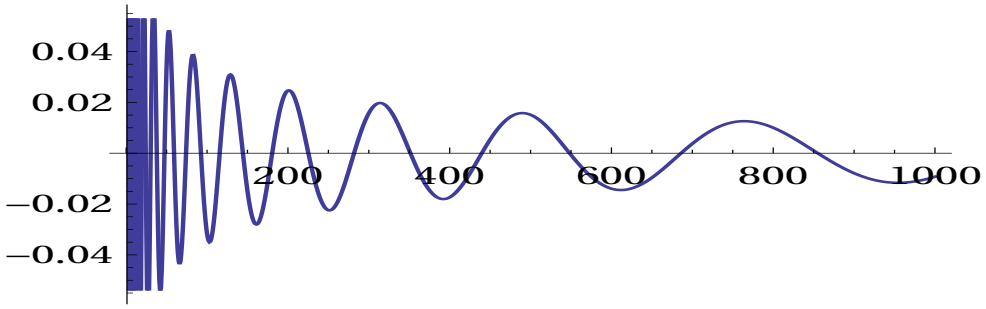


[10000]=0.027408947980112001 4524
[100000]=0.027235058191382041 6480
[1000000]=0.028318788781649457 9529
[10000000]=0.028456481822205600 9622
[100000000]=0.028363286620524202 9078
It does not converge to 0.

(The axis is 0.5 -0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(14.1347)\ln(2n-1)}{(2n-1)^{0.4999}} - \frac{\cos[(14.1347)\ln(2n)]}{(2n)^{0.4999}}] \tag{100}$$

= -0.009257840509601691345415572118652270020349....

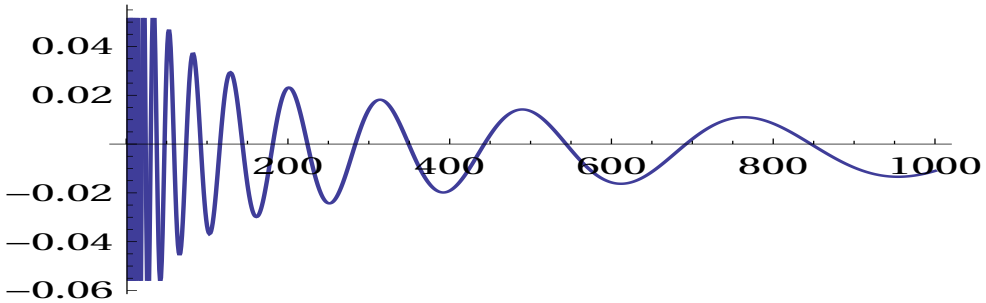


[10000] =0.000450798747349079624 2
[100000] =0.000891425953982662991 0
[1000000] =0.000036956041650341504 2
[10000000] =-0.000237664094981320124 8
It does not converge to 0.

(The axis is 0.5 -0.001)

$$\sum_{n=1}^{1000}[\frac{\cos[(14.1347)\ln(2n-1)]}{(2n-1)^{0.499}} - \frac{\cos[(14.1347)\ln(2n)]}{(2n)^{0.499}}] \tag{101}$$

= -0.011012896628270076268406675045803264708 03....

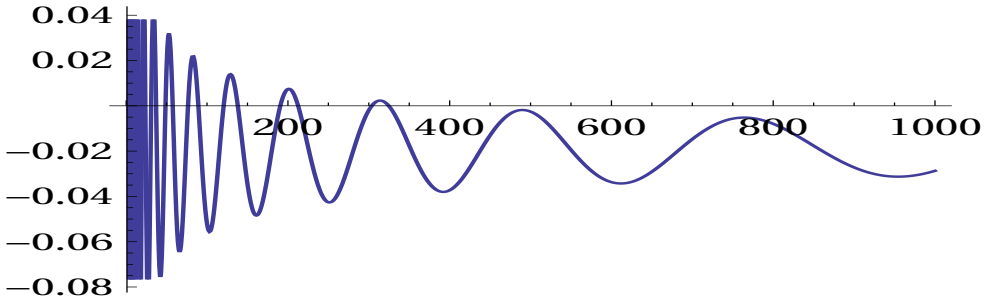


[10000] =-0.001236272491363781325 7
[100000] =-0.000789435193874906586 7
[1000000] =-0.001652865887360664221 4
[10000000] =-0.001931193941346099479 7
It does not converge to 0.

(The axis is 0.5 -0.01)

$$\sum_{n=1}^{1000}[\frac{\cos[(14.1347)\ln(2n-1)]}{(2n-1)^{0.49}} - \frac{\cos[14.1347\ln(2n)]}{(2n)^{0.49}}] \tag{102}$$

= -0.0287246146425618261....

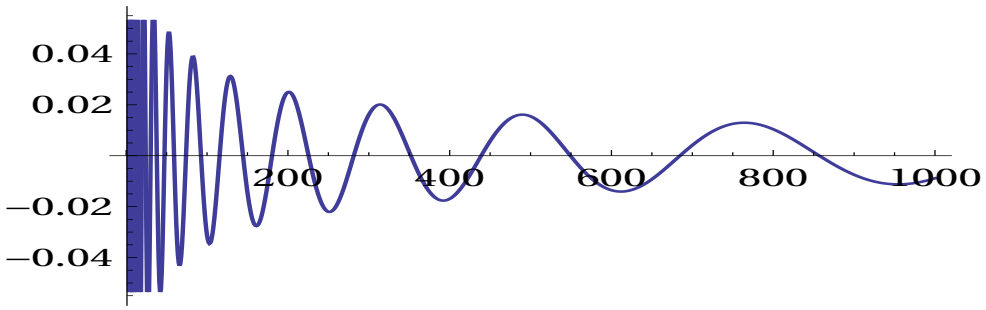


[10000]= -0.0182412463962976847953
[100000]= -0.0177277053736920320315
[1000000]= -0.0186860009565473737803
[10000000]= -0.019004287017689417554 9
[100000000]=-0.0189917517130979707218
It does not converge to 0.

(The axis is 0.5 as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(14.1347)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[14.1347\ln(2n)]}{(2n)^{0.5}}] \tag{103}$$

-0.00906301367133582151....

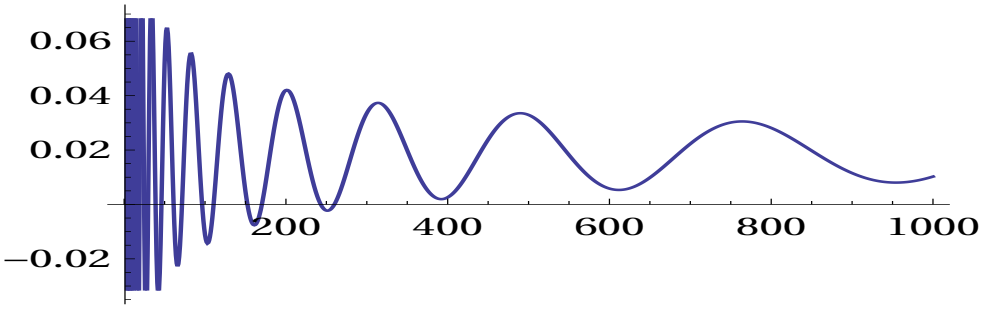


[10000]=0.0006381011115495365026
[100000]=0.0010780432416684295090
[1000000)=0.0002245632899122298001
[10000000]=-0.0000496479275200912434
[100000000]=-0.0000382288508812898928
converge to 0.

(The axis is 0.5 +0.01)

$$\sum_{n=1}^{1000}[\frac{\cos[(14.1347)\ln(2n-1)]}{(2n-1)^{0.51}} - \frac{\cos[14.1347\ln(2n)]}{(2n)^{0.51}}] \tag{104}$$

= 0.01024008264902787325....

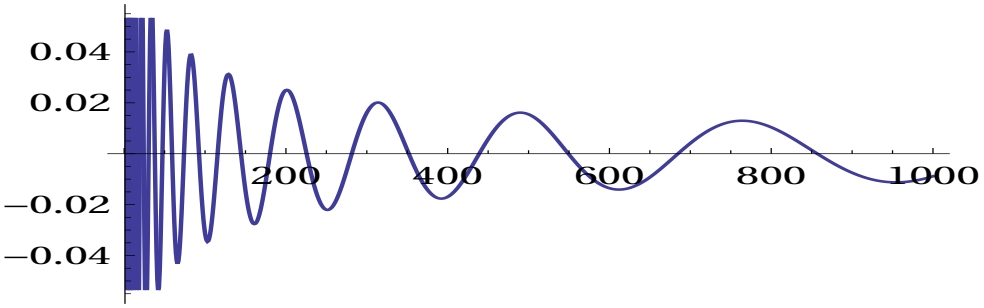


[10000]=0.019217608224737340 4555
[100000]=0.019593784074825908 8641
[1000000]=0.018833791341224887 6555
[10000000]=0.018597533957246940 8611
[100000000]=0.018607866258490684 4024
It does not converge to 0.

(The axis is 0.5 +0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(14.1347)\ln(2n-1)]}{(2n-1)^{0.5001}} - \frac{\cos[(14.1347)\ln(2n)]}{(2n)^{0.5001}}] \tag{105}$$

= -0.008868222680406964769889406332068608994503

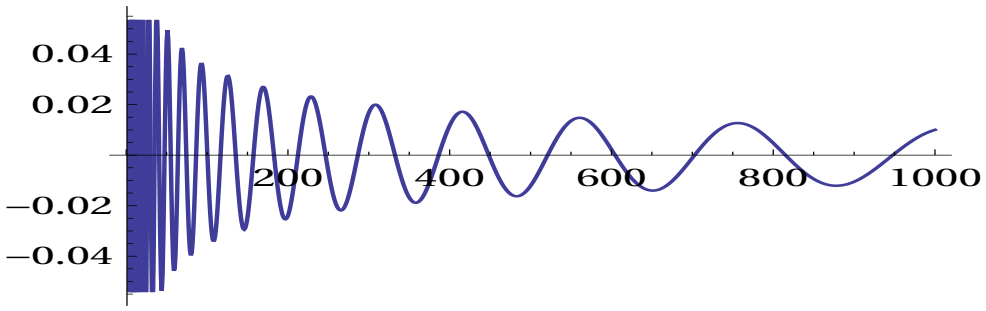


[10000] =0.000825373491803603 8232
[100000] =0.001264631527182712 1996
[1000000] =0.000412140404321286 5422
[10000000] =0.000138337495139104 9966
[100000000] =0.000149745516963495 5138
It does not converge to 0.

(The axis is 0.5 -0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.4999}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.4999}}] \tag{106}$$

= 0.010001932093239106167194820246006817970534785 6

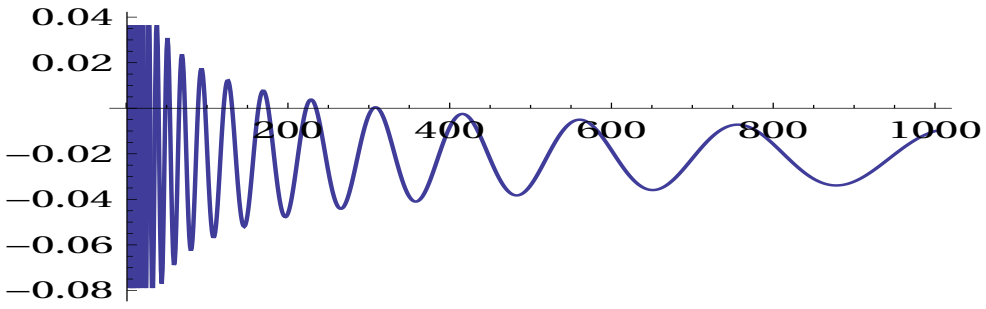


[10000]= -0.0025130531442483245580
[100000]= -0.0007592596129060642015
[1000000]= 0.0001734116036285227871
[10000000]= -0.0001707549672368732893
[100000000]= -0.0002018563265390039933
It does not converge to 0.

(The axis is 0.5 -0.01)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.49}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.49}}] \tag{107}$$

= -0.010077623957692851438798460105085212582630338 46

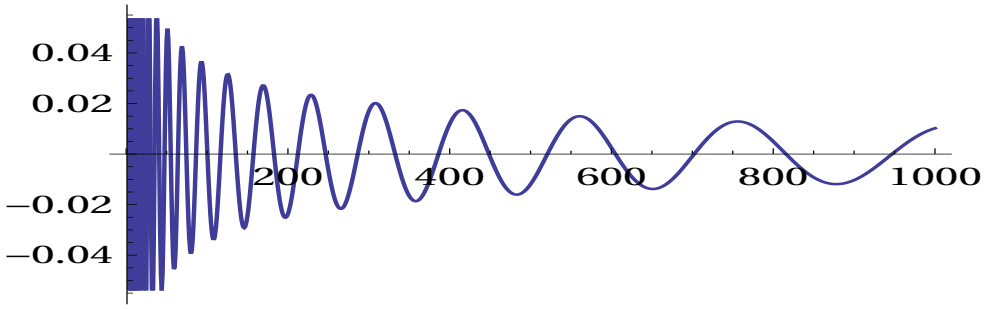


[10000]=-0.0236290071420571581862
[100000]=-0.0217095847284566982605
[1000000]=-0.0206482298290876220559
[10000000]=-0.0210456267984390245351
[100000000]=-0.0210832778695941719382
It does not converge to 0.

(The axis is 0.5 as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.5}}] \tag{108}$$

= 0.010203050972979707561650919065336067554566938594

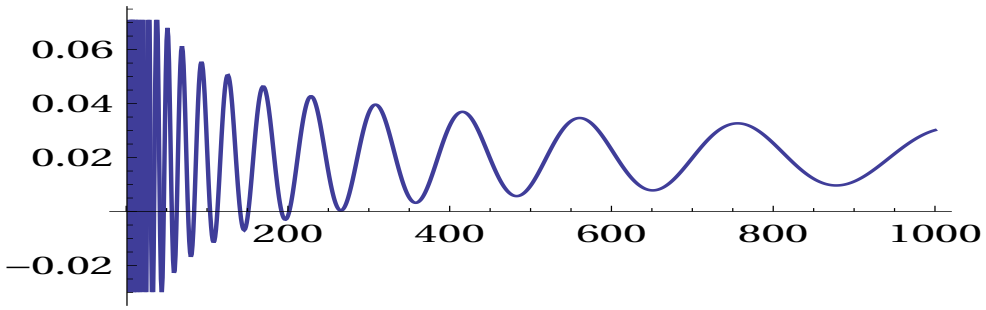


[10000]=-0.0023018856406172511289
[100000]=-0.000549692165757362108 7
[1000000]=0.0003817627764431225329
[10000000]=0.0000380957809653702473
[100000000]=0.000007054409295744 2871
converge to 0.

(The axis is 0.5 +0.01)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.51}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.51}}] \tag{109}$$

= 0.030143725066051978376188996565951945886148427 01

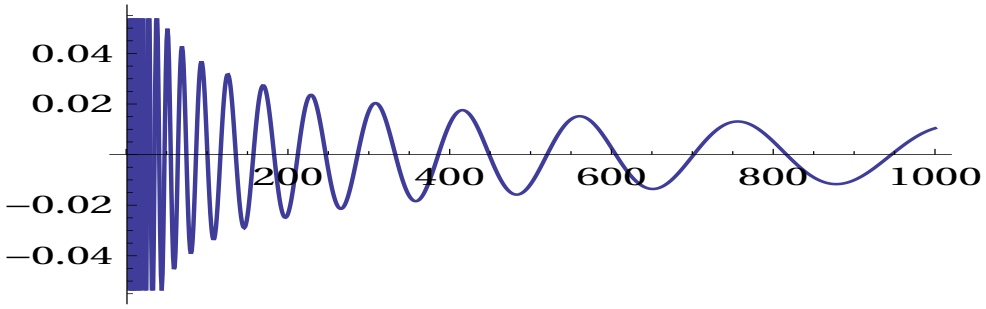


[10000]=0.0186034964827524601505
[100000)=0.0202026487431074264212
[1000000]=0.0210202028664549234183
[10000000]=0.0207230001134234807780
[100000000]=0.0206974093289953205155
It does not converge to 0.

(The axis is 0.5 +0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.5001}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.5001}}] \tag{110}$$

= 0.010404135850931615429481715273446838332 00

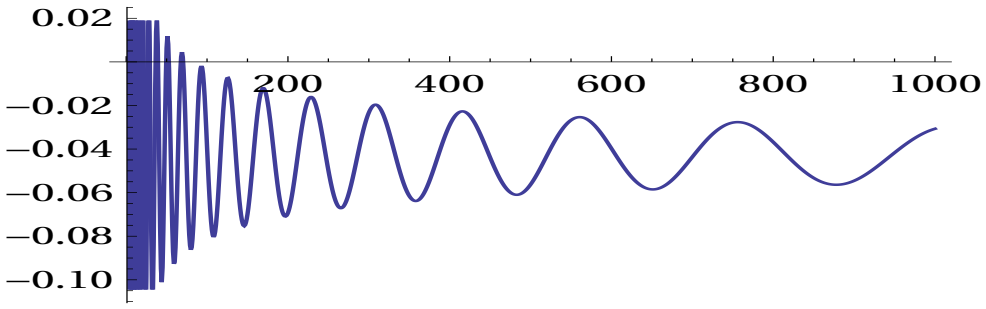


[10000]= -0.0020907603079233774354
[100000]= -0.0003401654715591180544
[1000000]= 0.0005900747938683002011
[10000000]= 0.0002469066484824651792
[100000000]= 0.0002159251488904244615
It does not converge to 0.

(The axis is 0.5 -0.02)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.48}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.48}}] \tag{111}$$

= -0.030701112671694936696152383369363401348 03

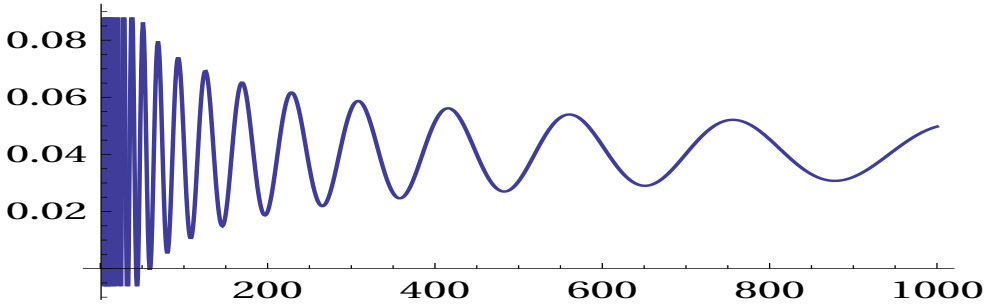


(calculation is omitted)

(The axis is 0.5 +0.02)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.52}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.52}}] \tag{112}$$

= 0.010404135850931615429481715273446838332 00

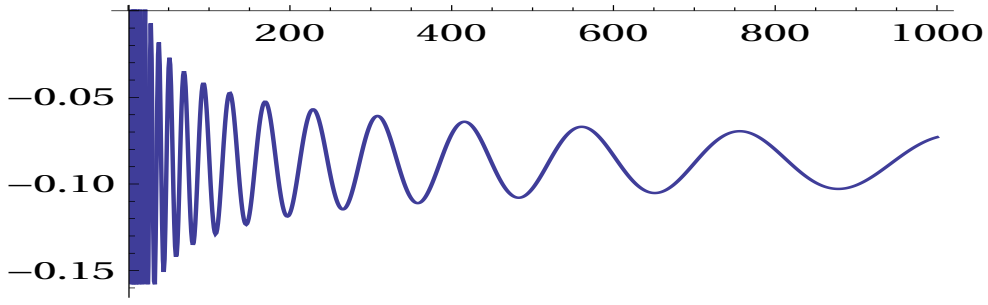


(calculation is omitted)

(The axis is 0.5 -0.04)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.46}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.46}}] \tag{113}$$

= -0.072986610593811964972041170453501037097 76

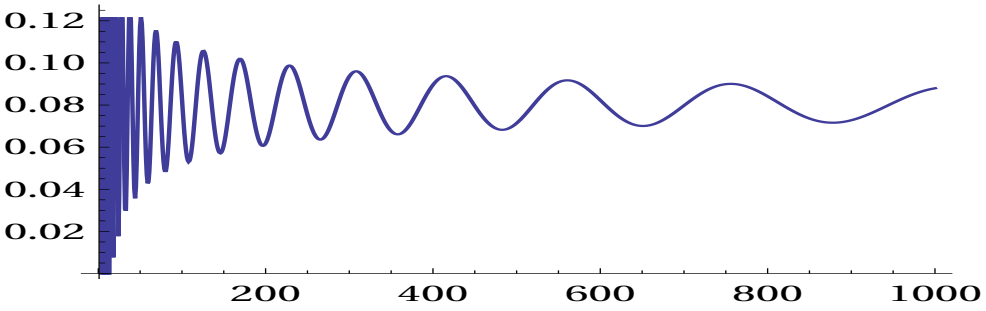


(calculation is omitted)

(The axis is 0.5 +0.04)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.54}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.54}}] \tag{114}$$

= 0.0879568118732802206757368611316983840780 2

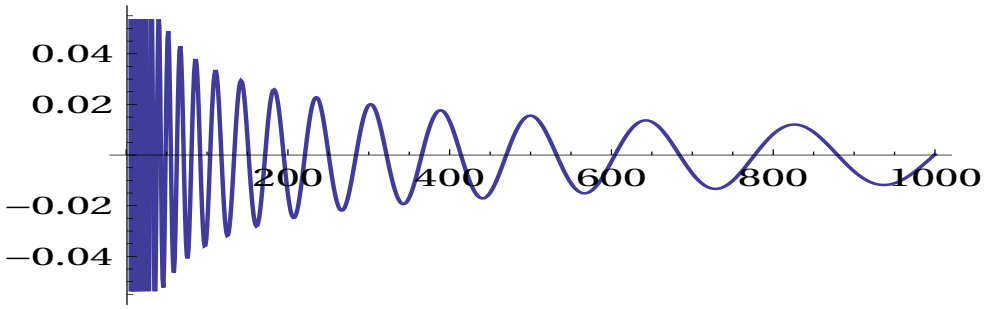


(calculation is omitted)

(The axis is 0.5 -0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(25.0108)\ln(2n-1)]}{(2n-1)^{0.4999}} - \frac{\cos[(25.0108)\ln(2n)]}{(2n)^{0.4999}}] \tag{115}$$

= 0.000234068395123175353021374176941021903126 3

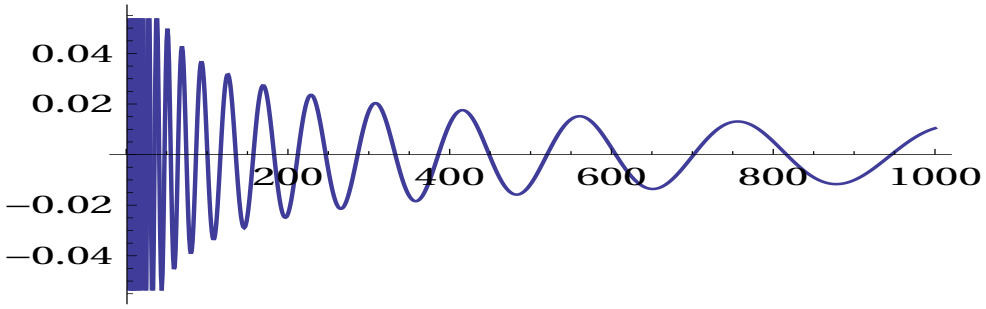


[10000]= 0.0028566554290930883629
[100000]= 0.0006906044201284139818
[1000000]= -0.0002709625732176824389
[10000000]= -0.0003618649905174442603
[100000000]=-0.0002947302460572199471
It does not converge to 0.

(The axis is 0.5 as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(25.0108)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(25.0108)\ln(2n)]}{(2n)^{0.5}}] \tag{116}$$

= 0.000416329417915032594395358125814297943316

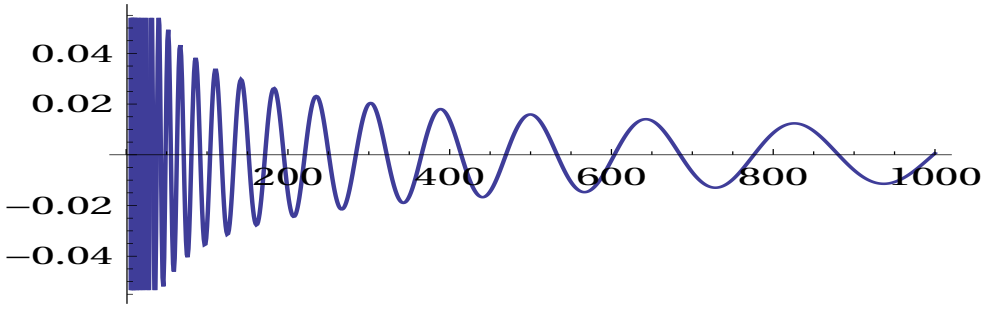


[10000]= 0.0030362058419032560315
[100000]= 0.0008720793230033872714
[1000000]= -0.0000883131280091895720
[10000000]= -0.0001790612933318289318
[100000000]=-0.0001120322912827072107
converge to 0.

(The axis is 0.5 +0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(25.0108)\ln(2n-1)]}{(2n-1)^{0.5001}} - \frac{\cos[(25.0108)\ln(2n)]}{(2n)^{0.5001}}] \tag{117}$$

= 0.000598554478395420697074619280386441419766 9

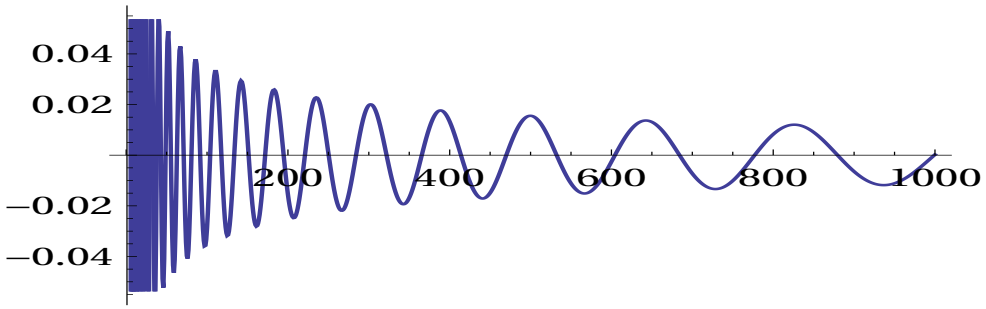


[10000]= 0.003215723062614568 2367
[100000]= 0.001053519396682899 1421
[1000000]= 0.000094300052958372 0780
[10000000]= 0.000003705878249452 7016
[100000000]=0.000070629302091781 0922
not converge

(The axis is 0.5 -0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(25.0108)\ln(2n-1)]}{(2n-1)^{0.4999}} - \frac{\cos[(25.0108)\ln(2n)]}{(2n)^{0.4999}}] \tag{118}$$

= 0.00023406839512317535302137417694102190312 63

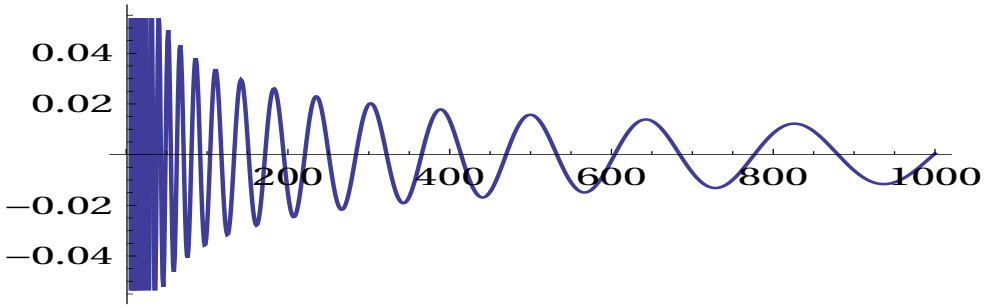


[10000]= 0.0028566554290930883629
[100000]= 0.0006906044201284139818
[1000000]= -0.0002709625732176824389
[10000000]= -0.0003618649905174442603
[100000000]= -0.0002947302460572199471
It does not converge to 0.

(The axis is 0.5 as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(25.0108)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(25.0108)\ln(2n)]}{(2n)^{0.5}}] \tag{119}$$

= 0.00059855447839542069707461928038644141976 69

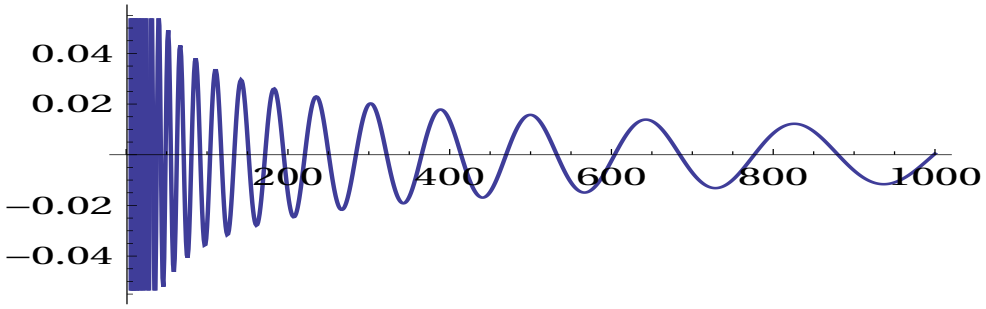


[10000]= 0.0030362058419032560315
[100000]= 0.0008720793230033872714
[1000000]= -0.0000883131280091895720
[10000000]= -0.0001790612933318289318
[100000000]=-0.0001120322912827072107
converge

(The axis is 0.5 +0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(25.0108)\ln(2n-1)]}{(2n-1)^{0.5001}} - \frac{\cos[(25.0108)\ln(2n)]}{(2n)^{0.5001}}] \tag{120}$$

= 0.000598554478395420697074619280386441419766 9

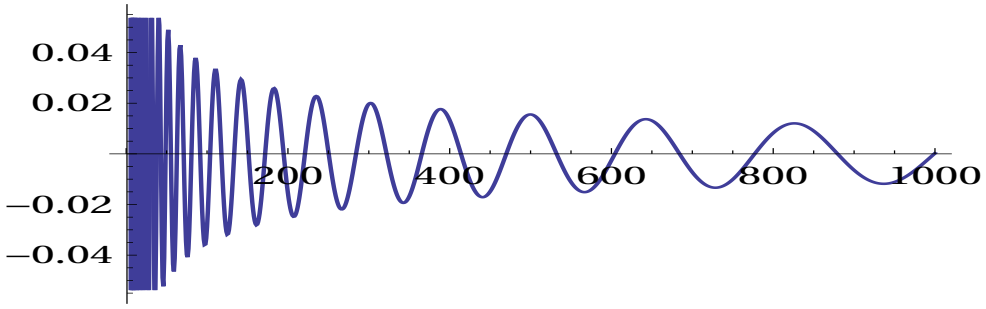


[10000]= 0.003215723062614568 2367
[100000]= 0.001053519396682899 1421
[1000000]= 0.000094300052958372 0780
[10000000]= 0.000003705878249452 7016
[100000000]=0.000070629302091781 0922
It does not converge to 0.

(The axis is 0.5 -0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(30.4249)\ln(2n-1)]}{(2n-1)^{0.4999}} - \frac{\cos[(30.4249)\ln(2n)]}{(2n)^{0.4999}}] \tag{121}$$

= -0.003621872781749893703241471240183001932850

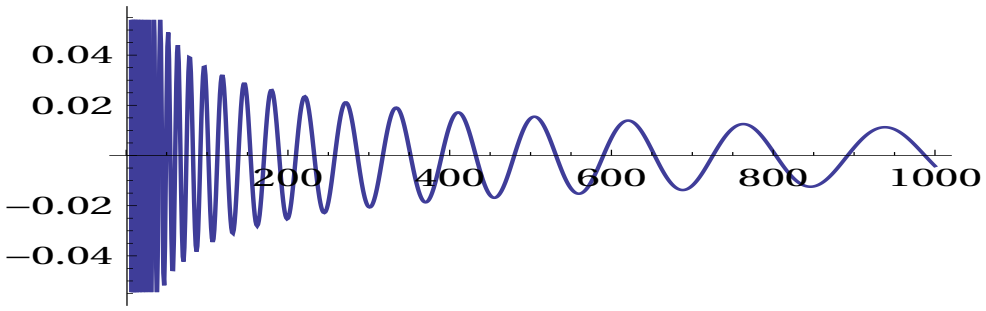


[10000]= -0.003685727318350589 5667
[100000]= -0.001167931893697444 9148
[1000000]= -0.000273216401393920 0088
[10000000]= -0.000191604861721904 0962
[100000000]=-0.000250709258547390 4211
It does not converge to 0.

(The axis is 0.5 +0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(30.4249)\ln(2n-1)]}{(2n-1)^{0.5001}} - \frac{\cos[(30.4249)\ln(2n)]}{(2n)^{0.5001}}] \tag{122}$$

= -0.00419637862576179712785086842891773778122 2

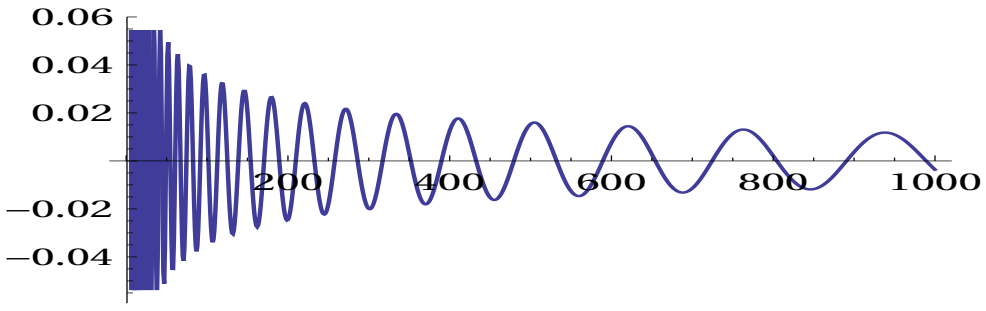


[10000]= -0.003110433566525467 2846
[100000]= -0.000597214086202124 5314
[1000000]= 0.000295314885364827 8642
[10000000]= 0.000376647498124926 3716
[100000000]=0.000317726176400590 3698
It does not converge to 0.

(The axis is 0.5 -0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(32.9351)\ln(2n-1)]}{(2n-1)^{0.4999}} - \frac{\cos[(32.9351)\ln(2n)]}{(2n)^{0.4999}}] \tag{123}$$

= -0.00652087387235260435068325827912086908925 9

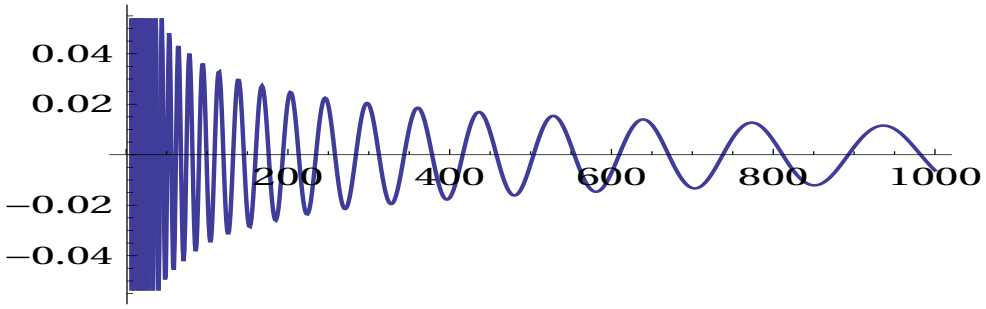


[10000]= -0.003326587015533984 8958
[100000]= -0.001425999753792001 1002
[1000000]= -0.000649934004796780 2842
[10000000]= -0.000395268754985239 2001
[100000000]= -0.000326991633907248 7417
It does not converge to 0.

(The axis is 0.5 as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(32.9351)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(32.9351)\ln(2n)]}{(2n)^{0.5}}] \tag{124}$$

= -0.006211350232338428548135531520246292646547

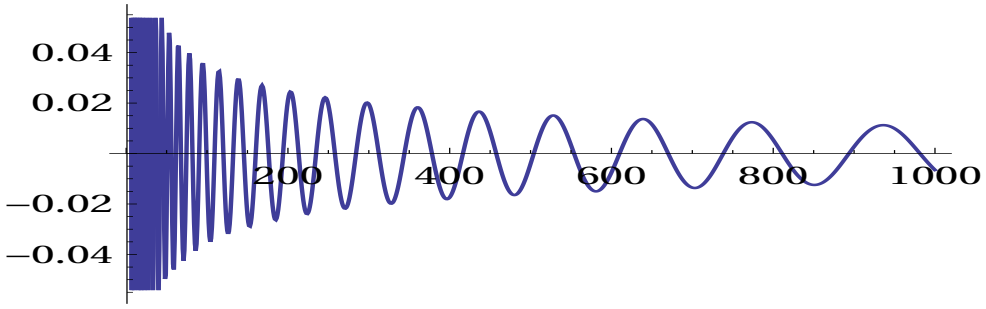


[10000]= -0.003018797493381407924 5
[100000]= -0.001119835802249660164 0
[1000000]= -0.000344639514090284873 4
[10000000]= -0.000090324813304388352 3
[100000000]=-0.000022159407427302588 0
converge to 0.

(The axis is 0.5 +0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(32.9351)\ln(2n-1)]}{(2n-1)^{0.5001}} - \frac{\cos[(32.9351)\ln(2n)]}{(2n)^{0.5001}}] \tag{125}$$

= -0.005901905538729304253398373095610640138367

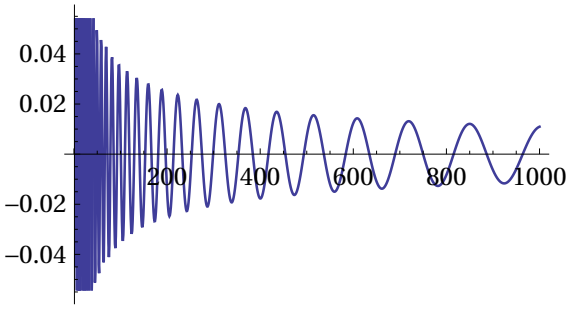


[10000]= -0.002711086285963923252 2
[100000]= -0.000813748868329038219 7
[1000000]= -0.000039421092356022285 5
[10000000]= 0.000214543536277744063 6
[100000000]= 0.000282597408932137709 5
It does not converge to 0.

(The axis is 0.5 -0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(37.5862)\ln(2n-1)]}{(2n-1)^{0.4999}} - \frac{\cos[(37.5862)\ln(2n)]}{(2n)^{0.4999}}] \tag{126}$$

= 0.010860456478423458486634505444398391316 58....

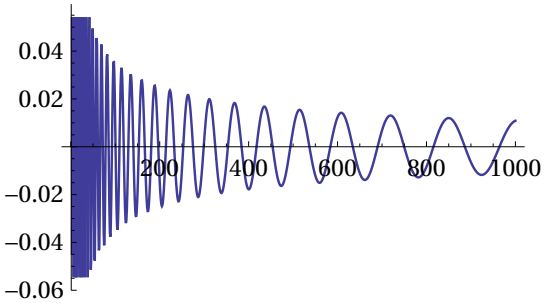


[10000]= -0.0002867678530919621984
[100000]= -0.0012464273837236416586
[1000000]= -0.0002241654742639324536
[10000000]= -0.0000308032050931214237
[100000000]= -0.0001146022572867225783
It does not converge to 0.

(The axis is 0.5 as it is.)

$$\sum_{n=1}^{1000}[\frac{\cos[(37.5862)\ln(2n-1)]}{(2n-1)^{0.5}} - \frac{\cos[(37.5862)\ln(2n)]}{(2n)^{0.5}}] \tag{127}$$

= 0.010941795390264808277991901745991142814 38....

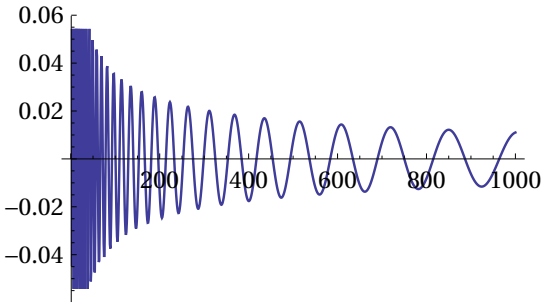


[10000]= -0.0001969237257829878525
[100000]= -0.0011553773481789157869
[1000000]= -0.0001343416061451328184
[10000000]= 0.0000587167172489908842
[100000000]= -0.0000249459169129748873
converge to 0.

(The axis is 0.5 +0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(37.5862)\ln(2n-1)]}{(2n-1)^{0.5001}} - \frac{\cos[(37.5862)\ln(2n)]}{(2n)^{0.5001}}] \tag{128}$$

= 0.011023133865048238884424480298698929637 67....

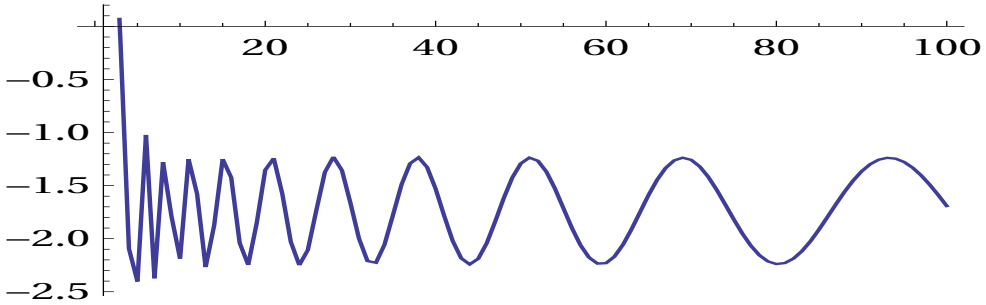


[10000]= -0.0001070865329218817518
[100000]= -0.0010643357530222712949
[1000000]= -0.0000445247128895299153
[10000000]= 0.0001482301450447530726
[100000000]= 0.0000647037088475878962
Hard to judge

(The axis is 0.00001)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.00001}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.0001}}] \tag{129}$$

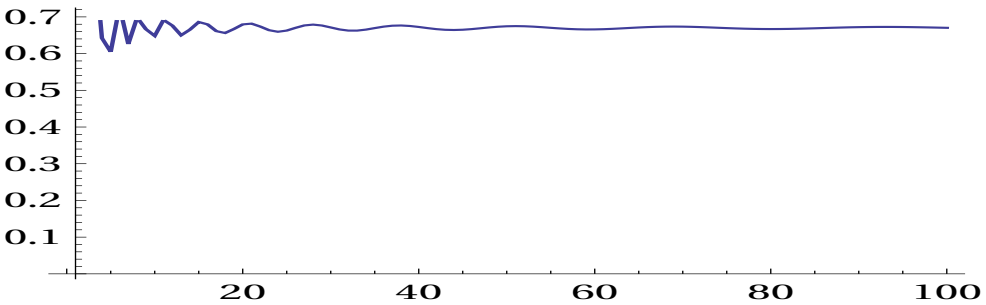
= -1.692375195790290774684627139614558154866....



(The axis is 0.99999)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.99999}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.99999}}] \tag{130}$$

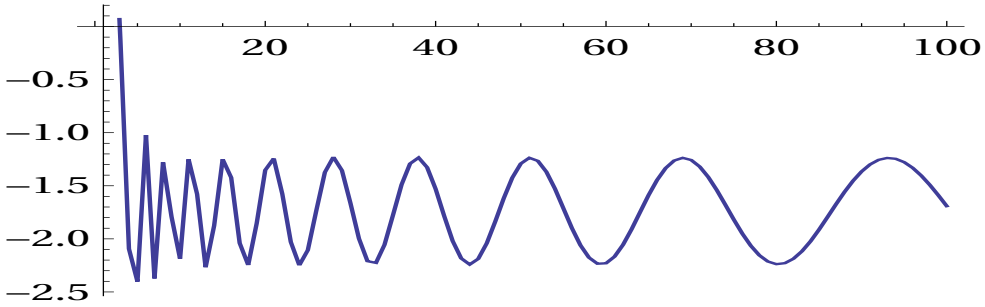
= 0.670228983034497532851473616356212861939 3....



(The axis is 0.0001)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.0001}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.0001}}] \tag{131}$$

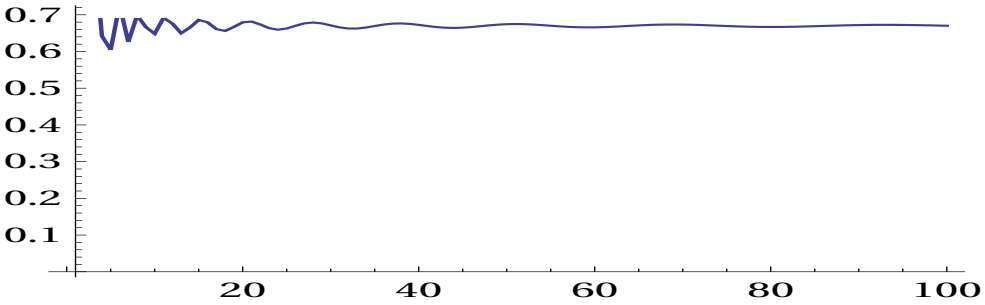
= -1.691914810408940984710921687899051853499....



(The axis is 0.9999)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.9999}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.9999}}] \tag{132}$$

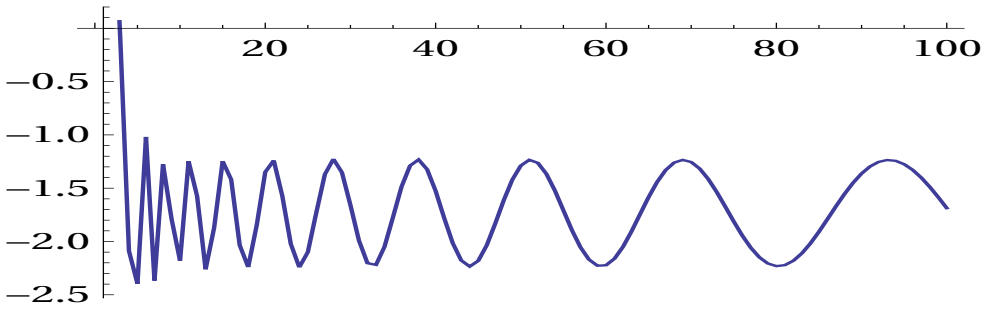
= 0.670157947361434047604773400487360636436 8....



(The axis is 0.001)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.001}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.001}}] \tag{133}$$

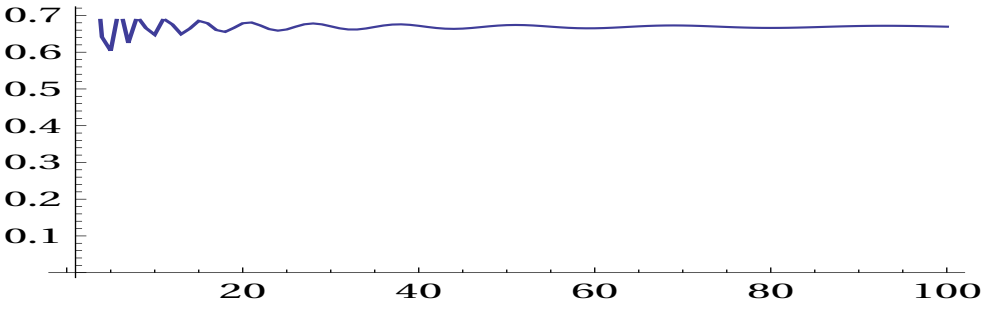
= -1.68731483013906970460631811359623736276 4....



(The axis is 0.999)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.999}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.999}}] \tag{134}$$

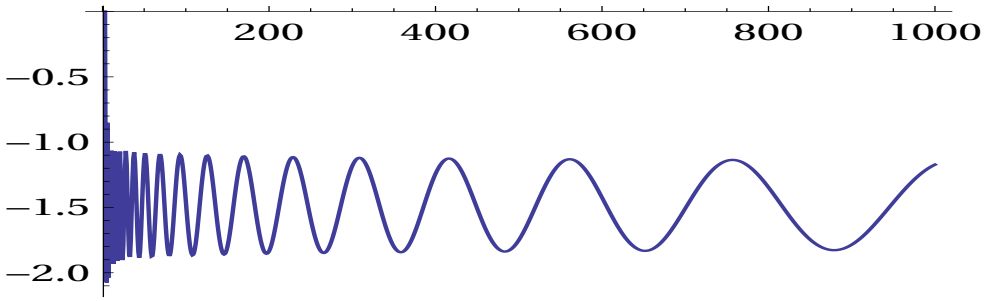
= 0.669446894244212304186195526108561268379 2....



(The axis is 0.05)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.05}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.05}}] \tag{135}$$

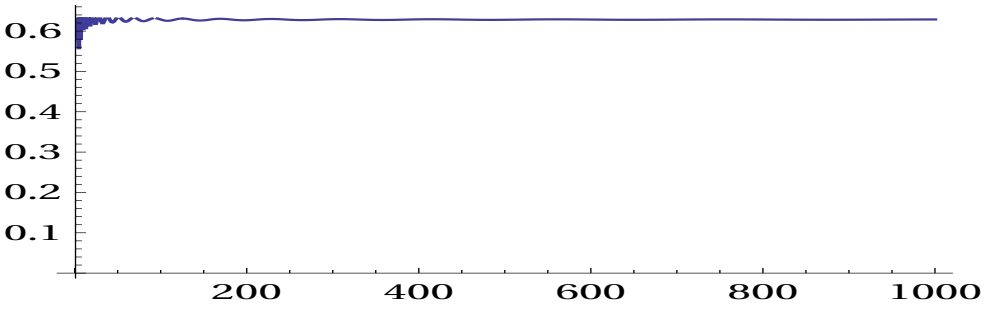
= -1.17202627800410380989751555952648260589 2....



(The axis is 0.95)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.95}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.95}}] \tag{136}$$

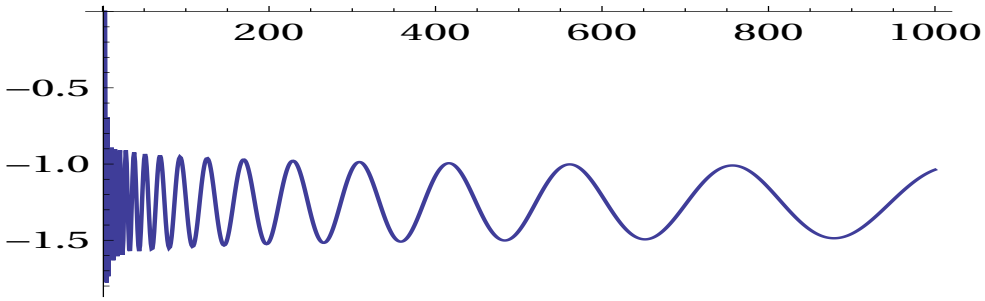
= 0.628793327503768552125482769229183595256....



(The axis is 0.1)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.1}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.1}}] \tag{137}$$

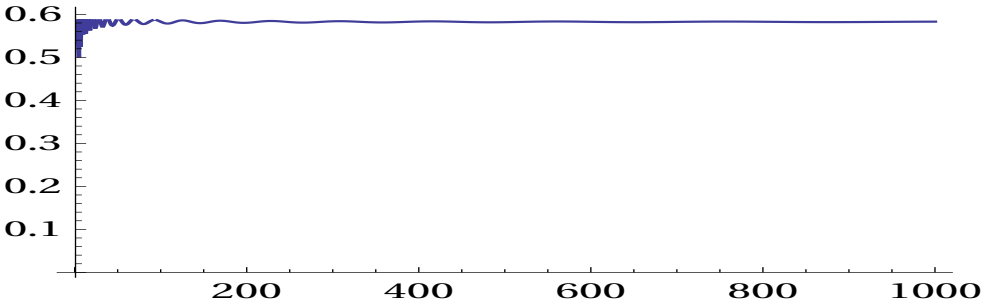
= -1.037181038243812266182221182644218150841....



(The axis is 0.9)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.9}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.9}}] \tag{138}$$

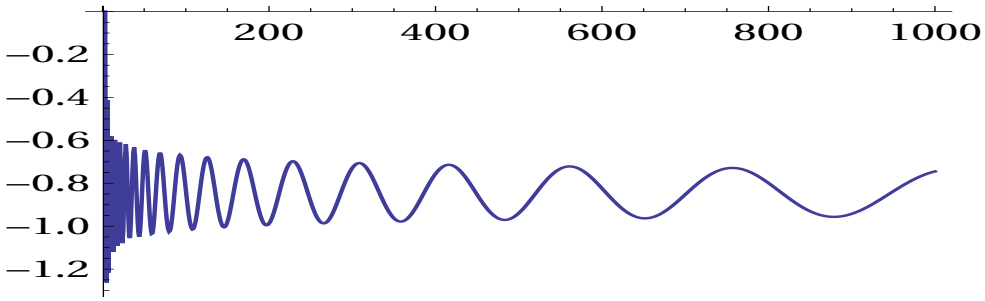
= 0.583091159670182512048364884832665147972 6....



(The axis is 0.2)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.2}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.2}}] \tag{139}$$

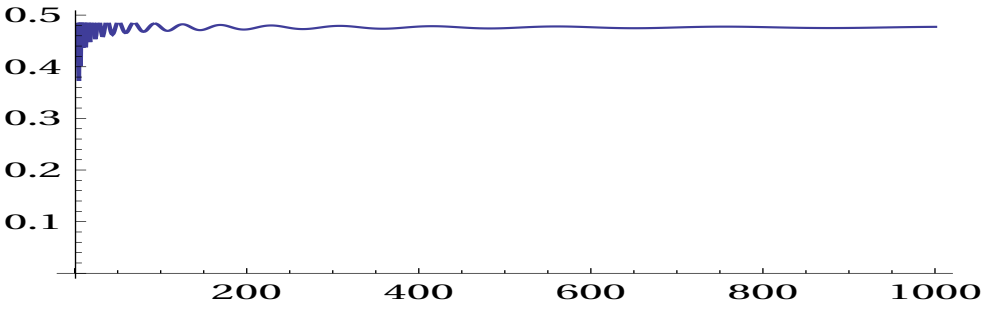
= -0.744793550996695078114144863729528045510 0....



(The axis is 0.8)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.8}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.8}}] \tag{140}$$

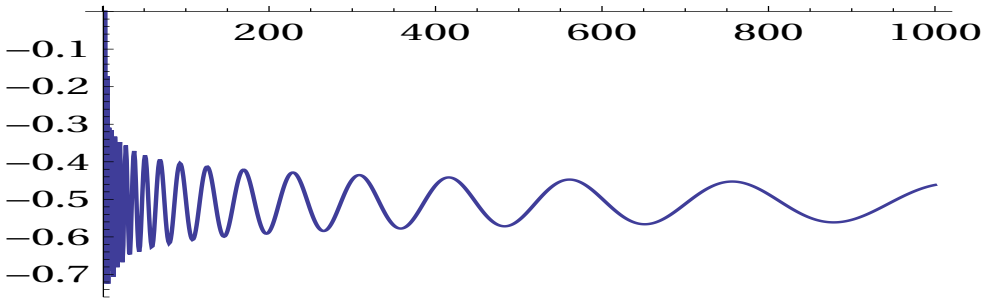
= 0.477262998523577592781968441021480087066 8....



(The axis is 0.3)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.3}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.3}}] \tag{141}$$

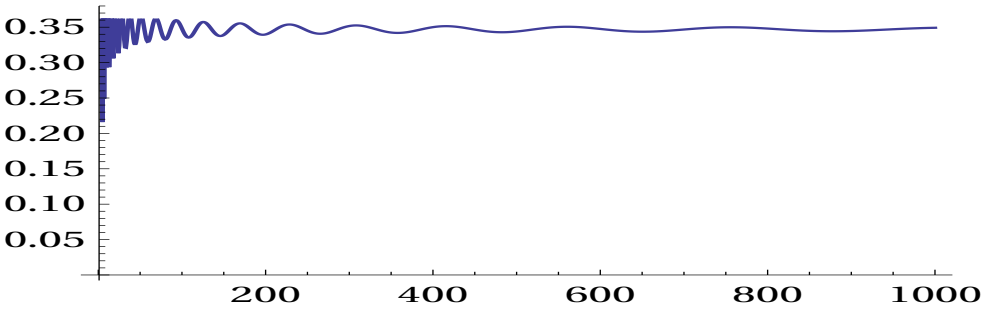
= -0.461695959638792697167789777438384029957 5....



(The axis is 0.7)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.7}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.7}}] \tag{142}$$

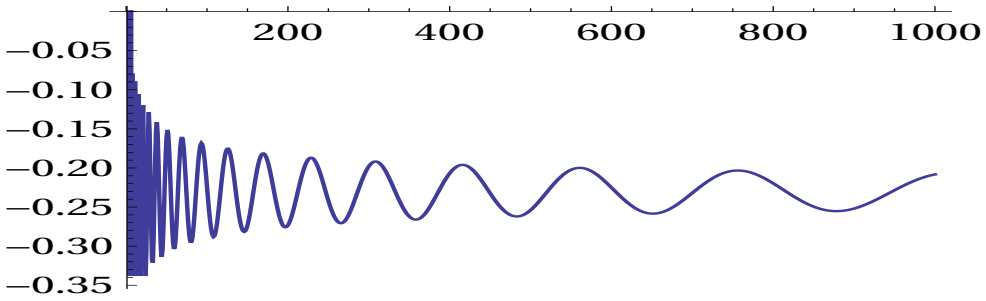
= 0.34917777683621681911737846635035573927 73....



(The axis is 0.4)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.4}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.4}}] \tag{143}$$

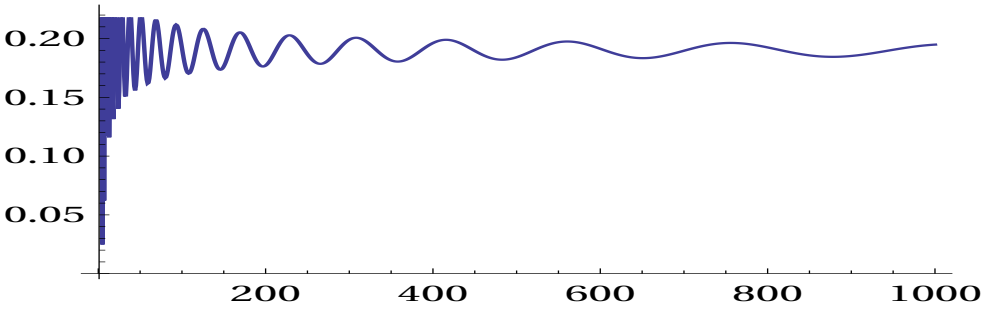
= -0.208278908871937283658286950663559658981 7....



(The axis is 0.6)

$$\sum_{n=1}^{1000}[\frac{\cos[(21.022)\ln(2n-1)]}{(2n-1)^{0.6}} - \frac{\cos[(21.022)\ln(2n)]}{(2n)^{0.6}}] \tag{144}$$

= 0.194859060814332403077140728945857530200....



3 conclusion

I declare that I made the following formula.

When c=1/2 and x are non-trivial zero values.

$$\sum_{n=1}^{\infty}[\frac{\cos(x\ ln(2n-1))}{(2n-1)^c}\ -\ \frac{\cos(x\ ln(2n))}{(2n)^c}]=0 \tag{145}$$

$$\sum_{n=1}^{\infty}[\frac{\sin(x\ ln(2n-1))}{(2n-1)^c}\ -\ \frac{\sin(x\ ln(2n))}{(2n)^c}]=0 \tag{146}$$

References

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