Original article

Is this Euler's mistake? Or is it just a misprint circling?

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Abstract

Euler's formula is generally expressed as follows.
\zeta(1-s)={\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}

$$\zeta(1-s)=\frac{2}{(2\pi)^s}\Gamma(s)\cos(\frac{s\pi}{2})\zeta(s)$$

However, I substitute (-2,-4,-6) in this and do not become zero.
There is not it and approaches only for a zero when I surely substitute Non trivial zero point (0.5+14.1347i, 0.5+21.0220i) for this formula.
It is either whether the formula of the Euler is wrong whether a misprint is sold as for this. I am convinced misprints are circulating.
I am convinced that it is sold It is make a mistake with cos, and to have printed sin.

Suppose you replace cos with sin.
\zeta(1-s)={\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}

$$\zeta(1-s) = \frac{2}{(2\pi)^s}\Gamma(s)\sin(\frac{s\pi}{2})\zeta(s)$$

Discussion

\zeta(1-
s)={\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}

$$\zeta(1-s) = \frac{2}{(2\pi)^s}\Gamma(s)\cos(\frac{s\pi}{2})\zeta(s)$$

When, s=-2
\zeta(3)=2*4*pi()^2*\gamma(-2)*(-1)*\zeta(-2)=0 this is mistake.
I used wolframalpha.com.
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}, {s=-2}
=indeterminate

But, When, s=-1
\zeta(2)=2*4*pi()^1*\gamma(-1)*0*\zeta(-1)=0 this is mistake.
I used wolframalpha.com.
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}, {s=-1}
=indeterminate

When, s=-3
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}, {s=-3}
= indeterminate

When, s=-4
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}, {s=-4}
= indeterminate

When s=0.5+14.1347

{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))},
{s=0.5+i14.1347} = 3.13536×10^-6 + 0.0000196934 i

When s=0.5+i21.022
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))},
{s=0.5+i21.022} = -9.85831×10^-6 + 0.0000439714 i

When s=0.5+i21.022
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))},
{s=0.5+i21.022} = -9.85831×10^-6 - 0.0000439714 i

When   s=0.5+ i 25.01086
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}, {s=0.5+ i 25.01086} = -1.08902×10^-6 - 3.13564×10^-6 i

When   s=0.5- i 25.01086
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}, {s=0.5- i 25.01086} = -1.08902×10^-6 + 3.13564×10^-6 i

When   s=0.5+ i 30.4249
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}, {s=0.5+i 30.42488} = 2.58604×10^-6 - 4.33953×10^-6 i

When   s=0.5- i 30.4249
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}, {s=0.5- i 30.42488} = 2.58604×10^-6 + 4.33953×10^-6 i

Suppose you replace cos with sin.
\zeta(1-s)={\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}

$$\zeta(1-s)=\frac{2}{(2\pi)^s}\Gamma(s)\sin(\frac{s\pi}{2})\zeta(s)$$

But, when s=-2
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{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=-2}
=indeterminate

I used wolframalpha.com.
But, When, s=-1
\zeta(2)=2*4*pi()^1*\gamma(-1)*1*\zeta(-1)= ∞^~
But, \zeta(2)= π ^2/6=1.6449…..   this is mistake.
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=-1} =
∞^~

When, s=-3
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=-3} =
∞^~

When, s=0
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=0} =
indeterminate

When, s=-2
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=-2} =

$$\lim_{s \to -2} \frac{2\,\Gamma(s)\sin\left(\frac{\pi s}{2}\right)\zeta(s)}{(2\pi)^s} = 0$$

When, s=-4
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=-4} =
indeterminate

$$\lim_{s \to -4} \frac{2\,\Gamma(s)\sin\left(\frac{\pi s}{2}\right)\zeta(s)}{(2\pi)^s} = 0$$

When s=0.5+i14.1347
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))},
{s=0.5+i14.1347} = -0.0000196934 + 3.13536×10^-6 i

When s=0.5+i21.022
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=0.5+ i 21.022} = -0.0000439714 - 9.85831×10^-6 i

When s=0.5-i21.022
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=0.5- i 21.022} = -0.0000439714 + 9.85831×10^-6 i

When   s=0.5+ i 25.01086
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=0.5+ i 25.01086} = 3.13564×10^-6 - 1.08902×10^-6 i

When   s=0.5- i 25.01086
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=0.5- i 25.01086} = 3.13564×10^-6 + 1.08902×10^-6 i

When   s=0.5+ i 30.4249
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=0.5+ i 30.42488} = 4.33953×10^-6 + 2.58604×10^-6 i

When   s=0.5- i 30.4249
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}, {s=0.5- i 30.42488} = 4.33953×10^-6 - 2.58604×10^-6 i

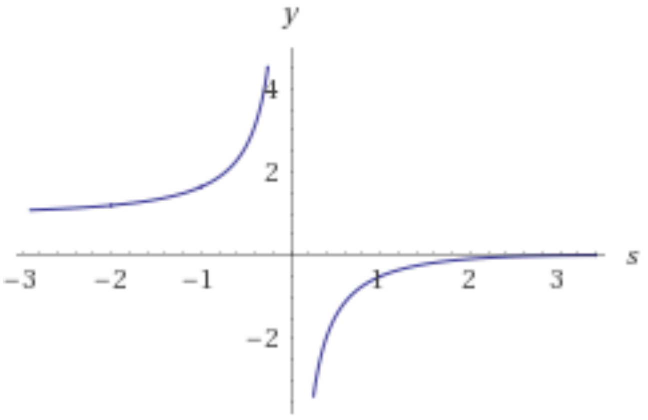
But,
{\frac{2}{(2*pi)^s}\Gamma(s)\cos(\frac{pi*s}{2})\zeta(s))}
Input:

$$\frac{2}{(2\pi)^s}\Gamma(s)\cos\left(\frac{\pi s}{2}\right)\zeta(s)$$

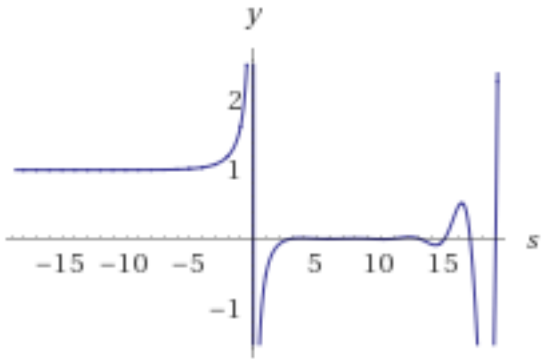
Exact result:

$$2^{1-s}\pi^{-s}\zeta(s)\cos\left(\frac{\pi s}{2}\right)\Gamma(s)$$

Plots:



(s from -2.9 to 3.4)



(s from -18.6 to 19.1)

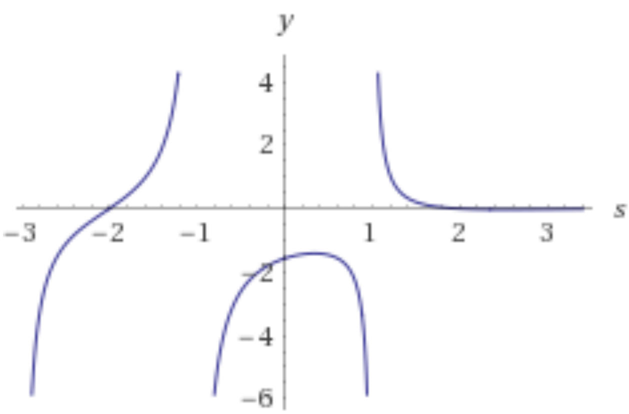
when
{\frac{2}{(2*pi)^s}\Gamma(s)\sin(\frac{pi*s}{2})\zeta(s))}
Input:

$$\frac{2}{(2\pi)^s}\Gamma(s)\sin\left(\frac{\pi s}{2}\right)\zeta(s)$$

Exact result:

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

Plots:



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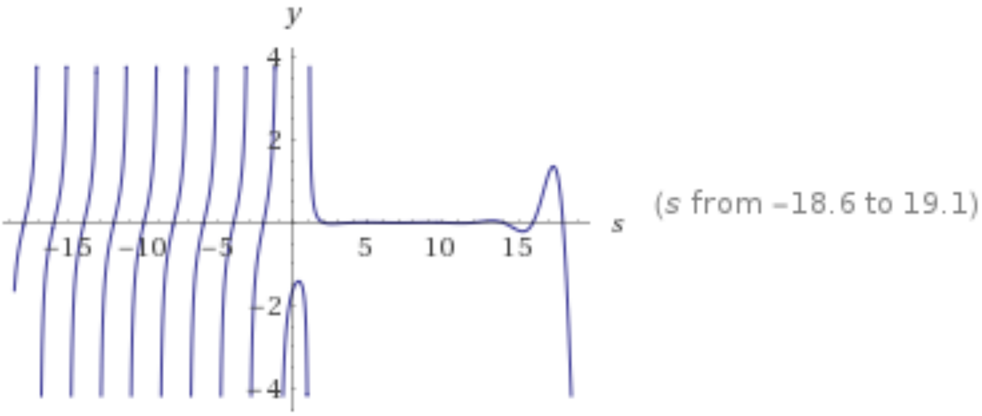

I am convinced misprints are circulating.

References

1) https://en.wikipedia.org/wiki/Riemann_hypothesis

postscript

In the field of mathematics, it is thought that such misprints are publicly appearing.
Is it only by putting it in Japan?

I noticed this mistake at the beginning (4 months ago) when I changed my hobby from fishing to mathematics, but I thought that it was a mistake in printing of my thin math book and left it alone.
However, when I tried to prove Lehman's expectation now, I noticed that this was generalized and I thought I should make it public (I noticed it when I was organizing the past files).
From when, I thought that this erroneous printing is on the circle, I thought that Euler I respect most and thought it should be made public.
I only learned mathematics in primary school. Therefore, while noticing this mistake in printing, I was not confident and confident about publicizing it. While I was in junior high school, a teacher of mathematics told me "It is the first students to have mathematics!" I was studying English only while I was studying English during math lessons.

In elementary school, there were many things being beaten up pointing out to teacher mistakes in arithmetic. I wondered why he was beaten if he pointed out the mistake. It was several years ago when I noticed the reason. I noticed it a few years ago because I will tread over my teacher's pride.
It is not an exaggeration to say that I was not good at English, started from the first year of junior high school, and I went to study in English only until I entered medical school. I did not study math at all, but my math scores were good. However, although I was studying English only, English was always the lowest point. Mathematics was always good grades. Even in high school, it was solved in mathematics in elementary school days.
From when I thought that I should make public this print mistake is circulating. I respect Euler the most.
In addition, as soon as my sentence is translated into English by google-translation, it will be encrypted, so there may be many sentences, misspellings etc, but the encryption can not be solved. Please do not forgive me.
This is written during hospital watch. I got up early and had a habit of mathematics early in the morning from 4 months ago.

☃～☃～☃～☃～☃～
I am a psychiatrist now and also a doctor of brain surgery before.

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I would like to receive an email. I will not answer the phone.

Currently 57 years old
Born on November 26, 1961
（**I am very poor of English. Almost all document are google-translation.**）
When converted to English by Google translation, it becomes cryptic to me.
But, I read letter by google translation.
In my case, if you translate it into English by google translation, I do not know what is written in my paper. For me, foreign languages such as English (actually not good at Japanese) is a demon.
As soon as it is translated into English, it turns into a cipher for me.