2 and 1/2+i40.9187

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Abstract

In 2^s, s is non-trivial zeos, only when 1/2+i40.9187 was found, the absolute value showed a low value of 1.28392...

For other non-trivial zeros, the absolute value is always 1.41421... or 1.41422...

I thought i40.9187 was equivalent to a prime number of 2 and searched for a prime number of 3, but I couldn't find it in the range I searched.

It is unclear what this means.

key words
2, i40.9187, absolute value, non-trivial zeros

1 introduction

if s=1/2+i14.1347
2^s=-1.31715 - 0.514893 i
abs(-1.31715 - 0.514893 i)=1.41421...

if s=1/2+i21.022
$2^s = -0.594904 + 1.28300i$
abs(-0.594904+1.28300i)=1.41421...

if s=1/2+i25.0109
$2^s = 0.0812375 - 1.41188i$
abs(0.0812375 - 1.41188 i)=1.41422...

if s=1/2+i30.4249

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$2^s = -0.876633 + 1.10974i$
abs(-0.876633+1.10974i)=1.41422...

if s=1/2+i32.9351
$2^s = -0.946330 - 1.05093i$
abs(-0.946330-1.05093i)=1.41421...

if s=1/2+i37.5862
$2^s = 0.856728 + 1.12517i$
abs(0.856728+1.12517i)=1.41421...

if s=1/2+i40.9187
$2^s = -1.40870... - 0.124780i$
abs(-1.40870-0.124780)=1.28392...

if s=1/2+i43.3271
$2^s = 0.262818 - 1.38958i$
abs(0.262818 - 1.38958 i)=1.41422...

if s=1/2+i48.00515
$2^s = -0.401566 + 1.356i$
abs(-0.401566 + 1.356i)=1.41421...

if s=1/2+i49.7738
$2^s = -1.41192 + 0.080496i$
abs(-1.41192 + 0.080496i)=1.41421...

if s=1/2+i14.1347
$3^s = -1.70425 + 0.30908i$
abs(-1.70425 + 0.30908 i)=1.73205...

if s=1/2+i21.022
$3^s = -0.779658 - 1.54665i$
abs(-0.779658 - 1.54665 i)=1.73205...

if s=1/2+i25.01086
$3^s = -1.21033 + 1.23899i$
abs(-1.21033 + 1.23899 i)=1.73205...

if s=1/2+i30.4249
$3^s = -0.735313 + 1.56822i$
abs(-0.735313 + 1.56822 i)=1.73205...

if s=1/2+i32.9351
$3^s = 0.0945058 - 1.72947i$

abs(0.0945058 - 1.72947 i)=1.73205...

if s=1/2+i37.5862
$3^s = -1.55814 - 0.756433i$
abs(-1.55814 - 0.756433 i)=1.73205...

if s=1/2+i40.9187
$3^s = 0.976998 + 1.4302i$
abs(0.976998 + 1.4302 i)=1.73205...

if s=1/2+i43.3271
$3^s = -1.53967 - 0.793357i$
abs(-1.53967 - 0.793357 i)=1.73205...

if s=1/2+i48.00515
$3^s = -1.35974 + 1.0729i$
abs(-1.35974 + 1.0729 i)=1.73205...

if s=1/2+i49.7738
$3^s = -0.504841 - 1.65685i$
abs(-0.504841 - 1.65685 i)=1.73206...

if s=1/2+i52.9703
$3^s = -0.128674 + 1.72726i$
abs(-0.128674 + 1.72726 i)=1.73205...

if s=1/2+i56.4462
$3^s = 1.18245 - 1.26563i$
abs(1.18245 - 1.26563 i)=1.73205...

if s=1/2+i59.347
$3^s = -1.2385 + 1.21083i$
abs(-1.2385 + 1.21083 i)=1.73205...

if s=1/2+i60.8318
$3^s = -1.13383 - 1.30936i$
abs(-1.13383 - 1.30936 i)=1.73205...

if s=1/2+i65.1125
$3^s = -1.29846 + 1.1463i$
abs(-1.29846 + 1.1463 i)=1.73205...

if s=1/2+i67.0798
$3^s = -0.229229 - 1.71682i$
abs(-0.229229 - 1.71682 i)=1.73206...

if s=1/2+i69.5464

$3^s = 0.926622 + 1.46334i$
abs(0.926622 + 1.46334 i)=1.73205...

2 Discussion

From $\zeta(s) = \zeta(1-s)$, 2^{1-s} and 2^s have the same real value, but the imaginary value is the opposite of plus or minus.

if s=1/2+i40.9187
$2^{1-s} = -1.40870... + 0.124780i$
abs(-1.40870+0.124780)=1.28392...

if s=1/2-i40.9187
$2^s = -1.40870... - 0.124780...i$
abs(-1.40870-0.124780)=1.28392...

Eq.(1) is Euler's formula and Eq.(2) is Riemann's formula.

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

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

It is as follows when calculated directly from Euler's formula and Riemann's formula.

$\zeta(s) = \{2^s\pi^{s-1}\sin(s\pi/2)\Gamma(1-s)\zeta(1-s)\}, \{s = 1/2 + i40.9187\}$=-5.75771×$10^{-6}$ $-$ 0.0000277487i

$\zeta(s) = \{2^s\pi^{s-1}\sin(s\pi/2)\Gamma(1-s)\zeta(1-s)\}, \{s = 1/2 - i40.9187\}$=-5.75771×$10^{-6}$ $+$ 0.0000277487i

$\xi(s) = \{1/2s(s-1)\pi^{-s/2}\Gamma(s/2)\zeta(s)\}, \{s = 1/2 + i40.9187\}$=2.31865×$10^{-16}$ $+ 7.22152 \times 10^{-27}i$

$\xi(s) = \{1/2s(s-1)\pi^{-s/2}\Gamma(s/2)\zeta(s)\}, \{s = 1/2 - i40.9187\}$=2.31865×$10^{-16}$ $- 7.22152 \times 10^{-27}i$

3 Conclusion

Only when 1/2+i40.9187 is the reason why the power of 2 has a different absolute value.

4 Postscript

These calculations were performed with WolframAlpha.

References

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