Complex variables the Riemann zeta function and disproof of the Riemann hypothesis

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Abstract

The Riemann zeta function is a function of a complex variable $s = \sigma + it$ where σ and t as real real numbers. In this research we will examine the different ways in which this complex variable can be constructed. We will examine one possible case of violation of the Riemann hypothesis.

Keywords Disproof of Riemann hypothesis; complex variables for the Riemann zeta function

Construction of a complex variable s with the real part being a constant and an example of disproof of the Riemann hypothesis

In the paper reference [1] a complex variable was constructed given by:

$$s = \frac{\ln(-\sqrt{k})}{\ln k} = \frac{1}{2} + \frac{i\pi}{\ln k} \tag{1}$$

In the same paper a complex variable of the form (2) below was introduced

$$s = \frac{\ln(-\sqrt[n]{k})}{\ln k} = \frac{1}{n} + \frac{i\pi}{\ln k} \tag{2}$$

In a similar vein a complex of the forms (3) and (5) below are can also be derived.

$$s = \frac{\ln(-k^n)}{\ln k} = n + \frac{i\pi}{\ln k} \tag{3}$$

$$s = \frac{\ln(-k^n)}{m \ln k} = \frac{n}{m} + \frac{i\pi}{m \ln k} \tag{4}$$

In the paper reference [1] it was shown Example Result that Contradicts the Riemann Hypothesis is

$$\zeta(-1000 - i\frac{1000\pi}{\ln 2}) = 0$$

A complex variable with the real part being variable

A complex variable of the forms (5) , (6) , (7) below can also be derived

$$s = \frac{\ln(-k^n)}{e^x \ln k} = \frac{n}{e^x} + \frac{i\pi}{e^x \ln k} \tag{5}$$

$$s = \frac{\ln(-k^n)}{e^x \ln k} = \frac{n}{\pi^x} + \frac{i}{\pi^{x-1} \ln k} \tag{6}$$

$$s = \frac{\ln(-k^m)}{\sqrt[n]{x} \ln k} = \frac{m}{\sqrt[n]{x}} + \frac{i\pi}{\sqrt[n]{x} \ln k} \tag{7}$$

It should also be noted that

$$s = \frac{\ln(-k^{\sqrt[n]{x}})}{\sqrt[n]{x} \ln k} = 1 + \frac{i\pi}{\sqrt[n]{x} \ln k} \tag{8}$$

Also

$$s = \frac{\ln(-k^{x^n})}{x^n \ln k} = 1 + \frac{i\pi}{x^n \ln k} \tag{9}$$

Summary and Conclusion

There are many possible ways of constructing the complex variable for the Riemann zeta function. Some of these complex variables when used in the Riemann zeta function, will generate non-trivial zeroes outside of the category envisioned in the Riemann hypothesis. These results falsify the Riemann hypothesis.
The Riemann hypothesis is therefore false.

References

[1] Samuel Bonaya Buya and John Bezaleel Nchima (2024). A Necessary and Sufficient Condition for Proof of the Binary Gold-

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