

## About Nontrivial Zeros of Riemann's Zeta Function

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Abstract

This short paper is about nontrivial zeros of Riemann's zeta function.

Assume  $z$  is the real part of all nontrivial zeros between  $0 < \text{Re}(z) < 1$

define:

$$\xi(z) = 1/2 z (1 - z) \pi^{-z/2} \Gamma(z/2) \zeta(z)$$

which satisfies the reflection formula

$$\xi(z) = \xi(1 - z)$$

which means

$$\xi(0) = \xi(1) = 1/2$$

if we put in any real part between  $0 < \text{Re}(z) < 1$  in the reflection formula

$$\xi(z) = \xi(1 - z)$$

the only invariant real part is  $\xi(\text{Re}(z)) = 1/2$

$$\xi(1/2) = \xi(1/2)$$

because  $z$  is the real part of all nontrivial zeros and  $\text{Re}(z) = 1/2$  is the only invariant real part in  $\xi(z)$ , the real part of all nontrivial zeros is invariant at  $1/2$ .

References:

[https://en.wikipedia.org/wiki/Riemann\\_Xi\\_function](https://en.wikipedia.org/wiki/Riemann_Xi_function)