The Riemann Hypothesis is false.

Abstract In this paper I prove that the RH is false, that is there aren’t zeros on the critical strip because I prove that the zeta function $\zeta(s)$ converges for part real of $s$ greater than zero.

**Theorem 0.1.** The zeta function $\zeta(s)$ for $s \in \mathbb{C}$ converges for part real of $s > 0$

**Proof.** Let the sequence $a_n : \mathbb{N} \to \mathbb{R}$ defined by $a_n = (n)^{\frac{l}{m}}$ with $l,m$ natural $0 < l < m$. The sequence is a Cauchy sequence in fact let $n,m \in \mathbb{N}$ $\lim_{n,m \to +\infty}|a_n - a_m| = 0$ we suppose that $m = n + k$ for a costant $k \in \mathbb{N}$ so

$$\lim_{n \to +\infty}a_{n+k} - a_n = \lim_{n \to +\infty}(n+k)^{\frac{l}{m}} - n^{\frac{l}{m}} = \lim_{n \to +\infty}\frac{l}{m}k\left(\frac{1}{n}\right)^{\frac{m-l}{m}} + o\left(\frac{1}{n}\right) = 0$$

$a_n$ is a Cauchy sequence in $\mathbb{R}$ so $a_n$ converges to $a \in \mathbb{R}$ and $a_n$ is an increasing sequence so $a > a_n \ \forall n \in \mathbb{N}$

$$a = \lim_{n \to +\infty}n^{\frac{l}{m}} = \lim_{x \to +\infty}x^{\frac{l}{m}} > x^{\frac{l}{m}} \ \forall 0 < l < m \ l,m \in \mathbb{N} \ \text{and} \ x \in \mathbb{R}$$

$m \frac{l}{l} > 0$ so

$$C = \frac{m}{l}a > \frac{m}{l}\frac{l}{m} = \frac{m}{l} \int_0^x \frac{d}{dt}t^{\frac{l}{m}}dt = \frac{m}{l} \int_0^x \frac{l}{m}\frac{1}{t}^{\frac{m-l}{m}}dt$$

$$C \geq \int_0^{+\infty} \frac{1}{x} \frac{m-l}{m}dx$$

$\frac{m-l}{m}$ is a descreasing function so

$$C \geq \int_0^{+\infty} \frac{1}{x} \frac{m-l}{m} > \sum_{j=1}^{+\infty} \frac{1}{j} \frac{m-l}{m}$$

For $l,m \in \mathbb{N}$ with $0 < l < m$ so $0 < \frac{m-l}{m}$ so for $s \in \mathbb{C}$ with part real of $s > 0$, $\zeta(s)$ converges.