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

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

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 $a > a_n \ \ \forall n \in \mathbb{N}$

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

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

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

$$\mathsf{c} \geqslant \int_0^{+\infty} \frac{1}{x}^{\frac{m-l}{m}} dx$$

$\frac{1}{x}^{m-l} m$ is a descreasing function so

$$\mathsf{c} \geqslant \int_0^{+\infty} \frac{1}{x}^{\frac{m-l}{m}} > \sum_{j=1}^{+\infty} \frac{1}{j}^{\frac{m-l}{m}}$$

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. □