Proof of Riemann hypothesis

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Abstract

In this paper, we show that Robin inequation is true for large N, and RH is true also

Let p_m is largest factor of N
for $\forall i$
$\sigma(N) < N \cdot \sum_{p \leq p_m} (\frac{p}{p-1}) \cdot (\frac{\sum_{k=0}^{ln_2 N} \frac{1}{p_i^k}}{\sum_{k=0}^{\infty} \frac{1}{p_i^k}}) < N \cdot \sum_{p \leq p_m} (\frac{p}{p-1}) \cdot (\frac{N-1}{N})$

for $x \geq 10^4$,
$\prod_{p<x} \frac{p}{p-1} \leq e^{\gamma} lnx(1 + \frac{1}{2ln^2 x})$
(Kevin Broughan, Equivalents of the Riemann hypothesis(2017), 188)
and
$\sigma(N) < N \cdot \prod_{p \leq p_m} \frac{p}{p-1}$
$\leq e^{\gamma} N lnp_m (1 + \frac{1}{2ln^2 p_m}) \cdot (\frac{N-1}{N})$
$\leq e^{\gamma} N lnp_m$
and
$\frac{\sigma(N)}{N} \leq \prod_{i=1}^{m} \sum_{p_i^k \leq N} \frac{1}{p_i^k}$
from that $\lim_{n \to \infty} \sqrt[n]{n\#} = e$
or $\lim_{n \to \infty} lnn\# = n$
$\sigma(n\#) < e^{\gamma} n\# lnn = e^{\gamma} n\# lnlnn\#$
$\sigma(N) < e^{\gamma} N lnlnN$

from https://en.wikipedia.org/wiki/Riemann_hypothesis
if
$\sigma(N) < e^{\gamma} N lnlnN$, RH is true.

Hence for large N,Robin inequation is true, and Riemann hypothesis is true also.