DISPROOF OF RIEMANN HYPOTHESIS

Choe Ryujin

Abstract. In this paper, I found other zetafunction's zero's moving all $\frac{1}{n^s}$ s to real axis, and then $\zeta(s)$ is continuous when $s = a + bi, 0 < a < 1$

1. instruction

When $\sqrt[k]{N} \notin \mathbb{N}$ for any natural number k, define N as independent number, $D_i(j)$ or D_i to i-th independent number, j is number of factors of D_i

for example, $D_1 = 2 = D_1(1), D_4 = 6 = D_4(2), D_8 = 12 = D_8(3)$

$\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s} = 1 + \sum_{i=1}^{\infty} \frac{\frac{1}{{D_i}^s}}{1 - \frac{1}{{D_i}^s}} = 1 + \sum_{j=1}^{\infty} \sum_{i=1}^{\infty} \frac{\frac{1}{D_i(j)^s}}{1 - \frac{1}{D_i(j)^s}}$

(s=a+bi)

$\frac{1}{n^s} = \frac{1}{n^s} \cdot e^{(-\frac{\ln n \cdot b}{2\pi} - \lfloor -\frac{\ln n \cdot b}{2\pi} \rfloor) \cdot 2\pi i} (-\frac{\ln n \cdot b}{2\pi} > 0)$

2. lemma

$for \frac{1}{D_p}, \frac{1}{D_q}$, there exist b that $\frac{1}{{D_p}^{bi}}, \frac{1}{{D_q}^{bi}} \in \{1, -1\}$

3. Proof of lemma

$for D_p, D_q, \frac{\ln D_p}{\ln D_q}$ is irrational number $(p \neq q)$

we can find $P_i, that \frac{n_i}{P_i} < \frac{-\ln D_p}{2\pi} < \frac{n_i + 1}{P_i}$

hence, $\lim_{i \to \infty} \frac{n_i}{P_i} = \frac{-\ln D_p}{2\pi}$

$\left\{ \left(\frac{-\ln D_p \cdot \mathrm{b}}{2\pi} - \left\lfloor \frac{-\ln D_p \cdot \mathrm{b}}{2\pi} \right\rfloor \right), \left(\frac{-\ln D_q \cdot \mathrm{b}}{2\pi} - \left\lfloor \frac{-\ln D_q \cdot \mathrm{b}}{2\pi} \right\rfloor \right) \right\}$

$= \left\{ \frac{n_i \cdot \mathrm{b}}{P_i} - \left\lfloor \frac{n_i \cdot \mathrm{b}}{P_i} \right\rfloor, \frac{n_j \cdot \mathrm{b}}{P_j} - \left\lfloor \frac{n_j \cdot \mathrm{b}}{P_j} \right\rfloor \right\}$

$= \{h_p, h_q\}$ $(h_p, h_q$ are arbitrary real number that $0 \leq h_p, h_q < 1$)

hence, there exist b that $\frac{1}{{D_p}^{bi}}, \frac{1}{{D_q}^{bi}} \in \{1, -1\}$

4. Proof

hence, we can find arbitrary sequence that $\frac{1}{{D_p}^b} = 1 or - 1$

$when \frac{1}{D_1(1)^{bi}} = \frac{1}{D_2(1)^{bi}} = \frac{1}{D_p(1)^{bi}} = \cdots = 1,$

2000 *Mathematics Subject Classification.* Primary 11M26.

Key words and phrases. riemann hypothesis, zeta function, prime number.

$\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^a} = \infty$

$when \frac{1}{D_1(1)^{bi}} = \frac{1}{D_2(1)^{bi}} = \frac{1}{D_p(1)^{bi}} = \cdots = -1,$

$\zeta(s) = 1 + \sum_{j=2n}^{\infty} \sum_{i=1}^{\infty} \frac{\frac{1}{D_i(j)^a}}{1 - \frac{1}{D_i(j)^a}} - \sum_{j=2n+1}^{\infty} \sum_{i=1}^{\infty} \frac{\frac{1}{D_i(j)^a}}{1 + \frac{1}{D_i(j)^a}}$

and

$\zeta(s) = 1 - \sum_{j=1}^{\infty} \sum_{i=1}^{\infty} \frac{\frac{1}{D_i(j)^a}}{1 + \frac{1}{D_i(j)^a}} + \sum_{j=2n}^{\infty} \sum_{i=1}^{\infty} \frac{\frac{1}{D_i(j)^a}}{1 - \frac{1}{D_i(j)^a}} + \frac{\frac{1}{D_i(j)^a}}{1 + \frac{1}{D_i(j)^a}} = -\infty$

and $\lim_{t \to \infty} \sum_{j=2n}^{\infty} \sum_{i=t}^{\infty} \frac{\frac{1}{D_i(j)^a}}{1 - \frac{1}{D_i(j)^a}} + \frac{\frac{1}{D_i(j)^a}}{1 + \frac{1}{D_i(j)^a}} = 0$

hence, when $0 < a < 1$, zeta function is continuous on real axis, from there is infinitely many route to converge, there is infinitely many s that $\zeta(s) = S$ (S is a arbitrary real number)

References

no reference

MOKPO, KOREA
E-mail address: zziniblue@hanmail.net