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Mathematical Sciences Colloquium

Prime Number Theorem

Professor
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May 12, 2022 16:00 - 17:15

>>>Venue(110-N103)<<<

Host

Professor Chol Park

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Abstract

This lecture is targeting a general math students. We show that there are infinitely many prime numbers in two ways. After that, we explore the distribution of prime numbers. Let $\pi(x)$ be the number of primes less than or equal to x. Before we prove the famous PNT (prime number theorem), we show that for $x \geq 2$,

$$\left(\frac{3\log 2}{8}\right)\frac{x}{\log x} < \pi(x) < (6\log 2)\frac{x}{\log x}.$$

Note that 3log/8 = 0.259940...., 6log2 = 4.15888....

Lastly, we prove the PNT.

Theorem(PNT) AS $x \to \infty$

$$\pi(x) \sim \frac{x}{\log x}.$$

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