

Counting Functions

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How many primes are there? Infinitely many! How can we be sure? We can prove it in many different ways. One of which is by using the Riemann zeta function. Zeta functions can be understood as "counting" functions that show the "distribution" of objects. Then what else can we "count" using zeta functions? In this talk, we will look at the connection between the number of primes and the Riemann zeta function, and the analogous connection between the number of cubic fields and the Shintani zeta functions. Most of the results I present will be classical, but I will also mention some recent advances in the field of research, without technical details.