

The Functions $\zeta(s)$ and $L(s, \chi)$

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Abstract

This is a two-part talk on the Riemann zeta function and Dirichlet L -functions. In the first part, we study their analytic continuation from the half-plane $\Re(s) > 1$ using integral representations involving the Γ -function, which allow extension to larger domains. In the second part, we derive the functional equation of the zeta function, revealing its symmetry about the critical line. We also briefly discuss the trivial zeros and some special values of $\zeta(s)$ at integers.

MSC Number: 11M35, 11M06, 30B50

Keywords: Hurwitz zeta function, Gamma function, analytic continuation, Riemann zeta function, Dirichlet L -functions

References

- [1] Apostol, T. M., *Introduction to Analytic Number Theory*. Springer, New York, 1976.