

Gould, H. W.; Shonhiwa, Temba

A catalog of interesting Dirichlet series. (English) Zbl 1143.11005
Missouri J. Math. Sci. 20, No. 1, 2-18 (2008).

Summary: A Dirichlet series is a series of the form

$$F(s) = \sum_{n=1}^{\infty} \frac{f(n)}{n^s},$$

where the variable s may be complex or real and $f(n)$ is a number-theoretic function. The sum of the series, $F(s)$, is called the generating function of $f(n)$. The Riemann zeta-function

$$\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s} = \prod_p \left(1 - \frac{1}{p^s}\right)^{-1},$$

where n runs through all integers and p runs through all primes is the special case where $f(n) = 1$ identically. It is fundamental to the study of prime numbers and many generating functions are combinations of this function. In this paper, we give an overview of some of the commonly known number-theoretic functions together with their corresponding Dirichlet series.

MSC:

11A25 Arithmetic functions; related numbers; inversion formulas
11M41 Other Dirichlet series and zeta functions

Cited in 4 Documents