

Power Series

In mathematics, a power series (in one variable) is an infinite series of the form

$$f(x) = \sum_{n=0}^{\infty} a_n (x - c)^n = a_0 + a_1(x-c)^1 + a_2(x-c)^2 + a_3(x-c)^3 + \dots$$

where a_n represents the coefficient of the n th term, c is a constant, and x varies around c (for this reason one sometimes speaks of the series as being centered at c). This series usually arises as the Taylor series of some known function.

Power Series

In many situations c is equal to zero, for instance when considering a Maclaurin series. In such cases, the power series takes the simpler form

$$f(x) = \sum_{n=0}^{\infty} a_n x^n = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + \cdots .$$