

Difference between the Exponential and Logarithmic Series.

(1) In the exponential series $e^x = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots \infty$ all the terms carry positive signs whereas in the logarithmic series $\log_e(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots \infty$ the terms are alternatively positive and negative.

(2) In the exponential series the denominator of the terms involve factorial of natural numbers. But in the logarithmic series the terms do not contain factorials.

(3) The exponential series is valid for all the values of x . The logarithmic series is valid when $|x| < 1$.