

Logarithm.

Logarithm of a number with respect to a given base is the power to which the base must be raised to represent that number.

If $a^x = N$ then $\log_a N = x$

Here x is called the logarithm of N to the base a .

There are two system of logarithm: Logarithm to the base 10 are called common logarithms whereas logarithms to the base e are called natural logarithm. They are written as \ln .

Conversion of natural log into common log: $\log_e x = 2.3026 \log_{10} x$

Important formulae of logarithm:

(i) $\log_a(mn) = \log_a m + \log_a n$ (Product formula)

(ii) $\log_a\left(\frac{m}{n}\right) = \log_a m - \log_a n$ (Quotient formula)

(iii) $\log_a m^n = n \log_a m$ (Power formula)

(iv) $\log_a m = \log_b m \log_a b$ (Base change formula)

Note: Antilogarithm is the reverse process of logarithm *i.e.*, the number whose logarithm is x is called antilogarithm of x . If $\log n = x$ then $n = \text{antilog of } x$