Contents

Expression for expansion of logarithmic series in algebra

$$\log_e(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} +$$

Scope of application for logarithmic series in algebra

- Greater than -1.
- Less than or equal to 1
- Not valid for x = -1

$$-1 < x \leq 1$$

Expression for expansion of natural log of 1 - x in in algebra

$$\log_e(1-x) = x - \frac{x^2}{2} - \frac{x^3}{3} - \frac{x^4}{4} -$$

Derivation for expression of natural log of ratio of 1 + x and 1 -x in algebra

- $$\log_e(1+x) - \log_e(1-x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + ... - (-x - \frac{x^2}{2} - \frac{x^3}{3} - \frac{x^4}{4} - ....)$$
- $$\log_e \frac{1+x}{1-x} = 2(x + \frac{x^3}{3} + \frac{x^5}{5} + ...)$$

Expression of natural log of ratio of 1 + x and 1 - x in algebra

- $$\log_e \frac{1+x}{1-x} = 2(x + \frac{x^3}{3} + \frac{x^5}{5} + ...)$$