

The Natural Logarithmic function

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Defⁿ. The natural logarithmic function is

$$f(x) = \log_e(x),$$

where the base is "e".

It is always denoted by $\ln(x)$ i.e.

$$f(x) = \boxed{\ln(x)}.$$

Remark.

$$\ln(e^x) = x, \quad \forall x \in \mathbb{R} = \text{Dom}(e^x)$$

$$e^{\ln x} = x \quad \forall x \in (0, \infty) = \text{Dom}(\ln x)$$

Common Logarithm

$$\boxed{\log x} = \boxed{\log_{10}(x)} \quad \boxed{\ln x = \log_e x}$$

Diagram showing the relationship between \ln and \log functions. Arrows point from the boxed expressions to the individual function boxes below.