Logarithms

Definition of a log

$X = B^Y$ is equivalent by definition to $Y = \log_B(X)$

Properties of Logarithms

Property one

$$X = \log_B(B^X)$$

Property two

$$B^{\log_b(x)} = X$$

Property three

$$\log_B(X) + \log_B(Y) = \log_B(X * Y)$$

Property four

$$\log_B(X) - \log_B(Y) = \log_B\left(\frac{X}{Y}\right)$$

Property five

$$\log_B(X^K) = K * \log_B(X)$$

Change of Base

$$\log_B(X) = \frac{\ln(X)}{\ln(B)}$$

$$\log_B(X) = \frac{\log_m(X)}{\log_m(B)}$$