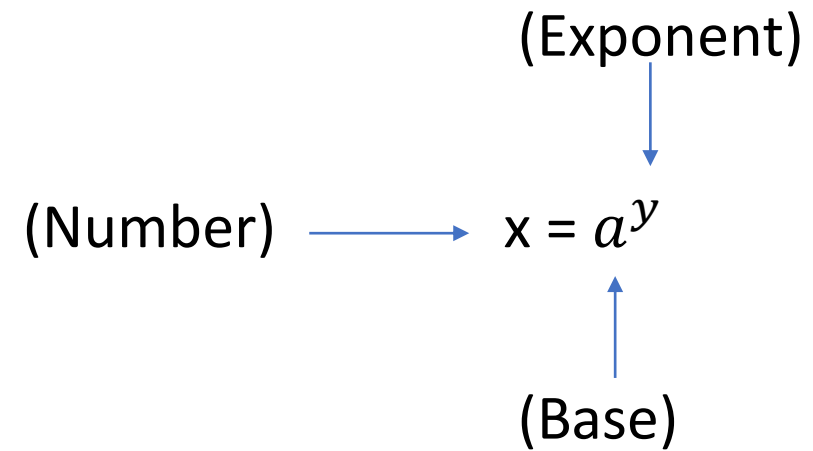
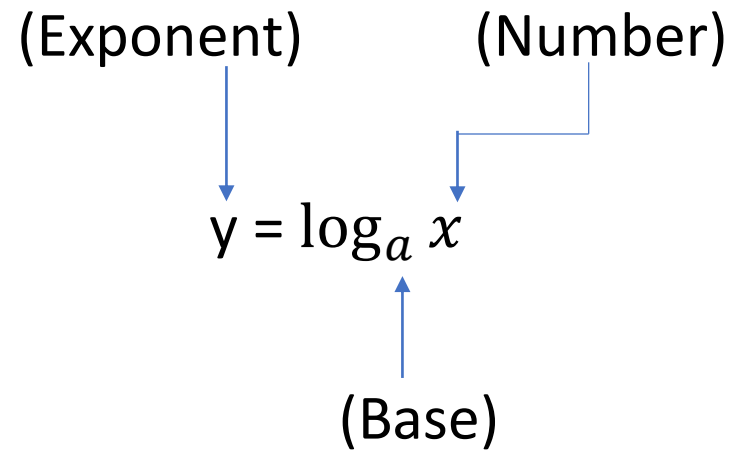


Logarithm

For positive number a , where $a \neq 0$,

$y = \log_a x$ means $x = a^y$.



Laws of Logarithm

1. $\log_a x + \log_a y = \log_a xy$

$$\log_2 3 + \log_2 5 = \log_2 15$$

2. $\log_a x - \log_a y = \log_a \frac{x}{y}$

$$\log_2 3 - \log_2 5 = \log_2 \frac{3}{5}$$

3. $\log_a x^n = n \log_a x$

$$\log_{10} 3^2 = 2 \log_{10} 3$$

4. $\log_y x = \frac{\log_a x}{\log_a y}$

$$\log_3 2 = \frac{\log_5 2}{\log_5 3}$$

Properties of Logarithm

1. $\log_a 1 = 0$, $a \in R^+ - \{1\}$

2. $\log_a a = 1$

3. $\log_b a = \frac{1}{\log_a b}$

4. $a^{\log_a x} = x$

5. $\log_{b^n} a^m = \frac{m}{n} \log_b a$