

## Exponentials

$$10^x * 10^y = 10^{x+y};$$

Example,

$$10^3 * 10^5 = 10^8$$

$$1000 * 100,000 = 100,000,000$$

Any number, x, to any power, a, times the same number to the same or a different power, b, equals that number to the power, a + b.

$$x^a * x^b = x^{a+b}$$

## Logarithms

$$\text{Log}(xy) = \text{log}(x) + \text{log}(y)$$

$$\text{Log}(x/y) = \text{log}(x) - \text{log}(y)$$

A logarithm is an exponent,

$$y = \text{log}_{10}(x) \text{ implies that } 10^y = x$$

If no base is specified, log usually means base 10.

$y = \ln(x)$  usually means base e.

This means that  $e^y = x$ .