Exponents and Logs

$$y = b^x \Leftrightarrow x = \log_b y$$

$$\text{power} = \text{base}^{\text{exponent}} \Leftrightarrow \text{exponent} = \log_{\text{base}} \text{power}$$

Exponential	Logarithmic
$b^0 = 1$	$\log_b 1 = 0$
$b^1 = b$	$\log_b b = 1$
$b^M \times b^N = b^{M+N}$	$\log_b(M \times N) = \log_b M + \log_b N$
$\frac{b^M}{b^N} = b^{M-N}$	$\log_b\left(\frac{M}{N}\right) = \log_b M - \log_b N$
$(b^M)^N = b^{M \times N}$	$\log_b M^N = N \times \log_b M$
$b^{-N} = \frac{1}{b^N}$ $b^{\frac{M}{N}} = \sqrt[N]{b}^{\,M} = \sqrt[N]{b^M}$	
	$\log_a b = \frac{\log_c b}{\log_c a}$ $= \frac{\log b}{\log a}$
Domain $\{x \in \mathbb{R}\}$ Range $\{y \in \mathbb{R} \mid y > 0\}$ y-intercept (0,1) horizontal asymptote $y = 0$	Domain $\{x \in \mathbb{R} \mid x > 0\}$ Range $\{y \in \mathbb{R}\}$ x-intercept (1,0) vertical asymptote x = 0