

Properties of Logarithmic Functions

1. $\log_b 1 = 0$

2. $\log_b b = 1$

3. $\log AB = \log A + \log B$

4. $\log \frac{A}{B} = \log A - \log B$

5. $\log A^n = n \log A$

6. $\log_b A = \frac{\log_m A}{\log_m b}$, where $m > 0$ and $m \neq 1$

7. $b^{\log_b A} = A$

8. $\log_b A = \frac{1}{\log_A b}$

9. $\log_b A = -\log_{\frac{1}{b}} A$

10. $\log_b \frac{1}{x} = -\log_b x$

11. $\frac{\log_a x}{\log_a y} = \frac{\log_b x}{\log_b y}$

12. $\log_b x = \log_b y$, if and only if $x=y$