

College Algebra Formulas Quiz 2 – Use This to Study

The Law of Exponents:

Given $a > 0$ with $a \neq 1$: If $a^u = a^v$ then $u = v$

SUMMARY Properties of Logarithms

In the list that follows, a, b, M, N , and r are real numbers. Also, $a > 0, a \neq 1, b > 0, b \neq 1, M > 0$, and $N > 0$.

Definition

$$y = \log_a x \text{ means } x = a^y$$

Properties of logarithms

$$\log_a 1 = 0 \quad \log_a a = 1$$

$$a^{\log_a M} = M \quad \log_a a^r = r$$

$$\log_a(MN) = \log_a M + \log_a N$$

$$\log_a\left(\frac{M}{N}\right) = \log_a M - \log_a N$$

$$\log_a M^r = r \log_a M$$

$$a^x = e^{x \ln a}$$

$$\text{If } M = N, \text{ then } \log_a M = \log_a N.$$

$$\text{If } \log_a M = \log_a N, \text{ then } M = N$$

Change-of-Base Formula

$$\log_a M = \frac{\log_b M}{\log_b a}$$

The compound interest formula states that $F = P \left(1 + \frac{r}{n}\right)^{nt}$

The continuously compounded interest formula states that $F = Pe^{rt}$

The exponential law states that an amount A varies with time t according to the function $A(t) = A_0 e^{kt}$

As long as the start time is 0, the value of k can be determined using the adder a and either the multiplier m or the divider d :

$$k = \frac{\ln m}{a} \quad \text{or} \quad k = \frac{\ln(1/d)}{a}$$