

Math 1060Q (109Q): Precalculus

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Exponents

Key Facts of Exponents

1. $x^0 = 1, x \neq 0$
2. 0^0 is undefined.

Properties of Exponents

1. $x^{a+b} = x^a x^b$
2. $x^{a-b} = x^a x^{-b}$
3. $x^{-a} = \frac{1}{x^a}$
4. $(xy)^a = x^a y^a$
5. $x^{ab} = (x^a)^b$
6. $x^{\frac{a}{b}} = (x^{\frac{1}{b}})^a$

Logarithms

Key Facts of Logarithms

1. $\log_b 1 = 0$
2. $\log_b b = 1$
3. $\log_b(b^x) = x$
4. $b^{\log_b x} = x$

Properties of Logarithms

1. $\log_b(xy) = \log_b x + \log_b y$
2. $\log_b\left(\frac{x}{y}\right) = \log_b x - \log_b y$
3. $\log_b x^a = a \log_b x$
4. $\log_b x = \frac{\log_a x}{\log_a b}$ where $a > 0, a \neq 1$