Properties of Logarithms

Product Property

$$\log_b m \cdot n = \log_b m + \log_b n \qquad \log_b m^{\chi} = \chi \cdot \log_b m$$

Power Property

$$\log_h m^{\chi} = \chi \cdot \log_h m$$

Quotient Property

$$\log_b \frac{m}{n} = \log_b m - \log_b n \qquad \log_b b = 1 \qquad \log_b 1 = 0$$

Special Log Properties

$$\log_b b = 1 \qquad \log_b 1 = 0$$

Inverse Properties

$$\log_b b^{\mathcal{X}} = x \qquad b^{\log_b x} = x$$

Product Property

$$\log_b m \cdot n = \log_b m + \log_b n \qquad \log_b \frac{m}{n} = \log_b m - \log_b n$$

Quotient Property

$$\log_h \frac{m}{n} = \log_h m - \log_h n$$

Power Property

$$\log_b m^x = x \cdot \log_b m$$

Expand the following logarithmic expressions

$$\log_4 \frac{3x^2}{7y^4}$$

Quotient Property

Power Property

$$\log_h m \cdot n = \log_h m + \log_h n$$

$$\log_b m \cdot n = \log_b m + \log_b n \qquad \log_b \frac{m}{n} = \log_b m - \log_b n$$

$$\log_{b} m^{x} = x \cdot \log_{b} m$$

Expand the following logarithmic expressions

$$\log_5\left[\frac{(x+4)^2}{2(x-3)^3}\right]$$

Quotient Property

Power Property

$$\log_b m \cdot n = \log_b m + \log_b n \qquad \log_b \frac{m}{n} = \log_b m - \log_b n$$

$$\log_{h} \frac{m}{n} = \log_{h} m - \log_{h} n$$

 $\log_h m^x = x \cdot \log_h m$

Expand the following logarithmic expressions

$$\ln \frac{x^4 \sqrt{4-x}}{(x+3)(x+1)^2}$$

Quotient Property

Power Property

$$\log_b m \cdot n = \log_b m + \log_b r$$

$$\log_b m \cdot n = \log_b m + \log_b n \qquad \log_b \frac{m}{n} = \log_b m - \log_b n$$

$$\log_b m^x = x \cdot \log_b m$$

Expand the following logarithmic expressions

$$\log_5 \left[\frac{x^4}{x^2 - 1} \right]^3$$

Properties of Logarithms

Product Property

 $\log_{h} m \cdot n = \log_{h} m + \log_{h} n \qquad \log_{h} m^{\chi} = \chi \cdot \log_{h} m$

Power Property

$$\log_{h} m^{\chi} = \chi \cdot \log_{h} m$$

Quotient Property

Special Log Properties

$$\log_b \frac{m}{n} = \log_b m - \log_b n \qquad \log_b b = 1 \qquad \log_b 1 = 0$$

Inverse Properties

$$\log_b b^{\mathcal{X}} = x \qquad b^{\log_b x} = x$$