Write the following logs in exponential form:

$$y = \log_8 25 \qquad \qquad 30 = \log_3 x$$

Write the following exponential equations in log form:

$$12 = 5^x \qquad \qquad \mathcal{Y} = 2^{-3x}$$

Properties of Logs #36 for all positive #'s M, N, b, and x: Product Rule $\log_b M \cdot N = \log_b M + \log_b N$ Quotient Rule $\log_b \frac{M}{N} = \log_b M - \log_b N$ Power Rule $\log_b M^x = x \log_b M$

Product Rule	Quotient Rule	Power Rule

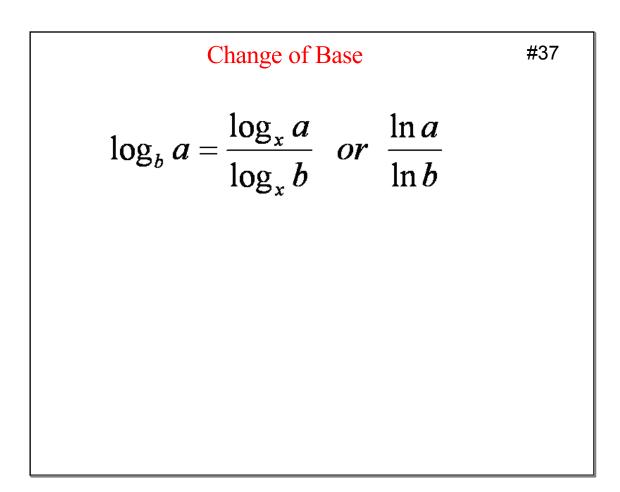
Write the following logs in expanded form:

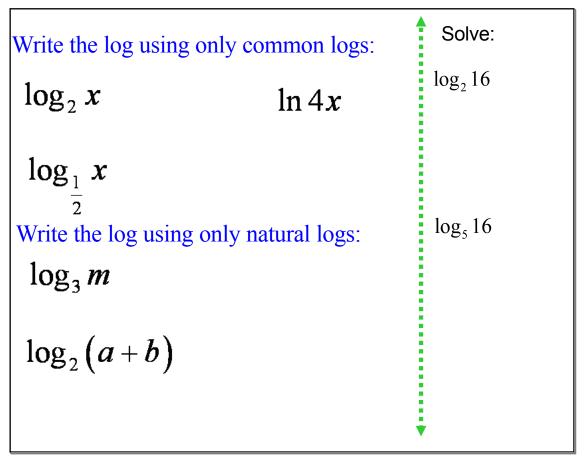
$$\log_4 5x$$
 $\log_4 \frac{x^2}{y^3}$
 $\log_4 12$ $\ln x^5$
 $\log_4 \frac{x}{6}$ $\ln \frac{3x^2}{5y^3}$

Write the following expression as a single log:

$$\log_4 7 + \log_4 5$$

 $\ln x - \ln y$
 $2\log_4 3 - \log_4 5$
 $4\ln x + 2\ln y$
 $\frac{1}{3}\ln xy - \frac{2}{3}\ln xy$





Describe how to transform the graph of $y = \ln x$ into the given function:

$$f(x) = \log_3 x$$

$$f(x) = \log_{\frac{1}{4}} x$$