Evaluate: $\log_{16} \frac{1}{4}$

Inverse: $y = \ln(x+1)$

Graph, D/R, PF: $y = \log_3(x-2)+4$

Chapter 7.5: Apply Properties of Logarithms

$$\log_b mn = \log_b m + \log_b n$$

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

$$\log_b m^n = n \log_b m$$

if $\log_4 3 \approx 0.792$ and $\log_4 7 \approx 1.404$ find:

$\log_4 \frac{3}{7}$

$\log_4 3 - \log_4 7$

$0.792 - 1.404$

$-.612$

$\log_4 21$

$\log_4 (7 \cdot 3)$

$\log_4 (7) + \log_4 (3)$

$1.404 + .792$

$2.196$

$\log_4 49$

$\log_4 7^2$

$2(\log_4 7)$

$2(1.404)$

$2.808$

Expand:

$\log_6 \frac{5x^3}{y}$

$\log_6 5x^3 - \log_6 y$

$\log_6 5 + \log_6 x^3 - \log_6 y$

$\log_6 5 + 3\log_6 x - \log_6 y$

Rewrite as one log.

$$\log 9 + 3\log 2 - \log 3$$

$\log 9 + \log 2^3 - \log 3$

$\log(9 \cdot 8) - \log 3$

$\log \frac{72}{3}$

$\log 24$

Change of Base Formula:

$$\log_c a = \frac{\log_b a}{\log_b c}$$

$\frac{\log a}{\log c}$

Evaluate using common log and natural log.

$\log_3 8 = 1.892$

$\frac{\log 8}{\log 3} = 1.892$ $\frac{\ln 8}{\ln 3} = 1.892$

For a sound with intensity I, the loudness L(I) of the sound is given by the function

$$L(I) = 10 \log \frac{I}{I_o}$$

Where $I_o$ is the intensity of a barely audible sound($10^{-12}$). An artist in a recording studio turns up the volume of a track so that the sound's intensity doubles. By how many decibels does the loudness increase?

# Homework: Chapter 7.5 pg.510 #'s 4,6,10,14,18,22,26,30, 36,40,46,52,58,70