C12 - 8-1 - $log_b\, a = ?\, HW$

Evaluate. Think of what power must you raise the base to in order to equal the "thing you are logging".

$\log_2 8 = 3$ $\log_2 16 =$ $\log_3 9 =$ $\log_2 1024 =$

$\log_2 4 =$ $\log_2 64 =$ $\log_2 32 =$ $\log_3 27 =$

$\log_4 16 =$ $\log_1 49 =$ $\log_{10} 100 =$ $-\log_2 16 =$

$\log_5 0 =$ $\log_0 3 =$ $\log_7 1 =$ $\log_2\left(\frac{1}{4}\right) =$

$\log_4 2 =$

$\log_{\frac{1}{4}} \frac{1}{16} =$ $\log_{\frac{1}{2}} 8 =$

Evaluate. Think of what power must you raise the base to in order to equal the "thing you are logging".

$\log_3 3^2 =$ $\log_2 2^4 =$ $\log_4 4^3 =$ $\log_5 5^x =$

$\log_5 5^{78} =$ $\log_3 3^{\frac{1}{2}} =$ $\log_a a^2 =$ $\log_x x^5 =$

Change the base of the "thing you are logging" to be the same as the base of the log, and evaluate as above.

$\log_2 4 =$ $\log_3 27 =$ $\log_5 125 =$ $\log_6 36 =$

$\log_2 16 =$ $\log_8 512 =$ $\log_5 \sqrt[3]{5} =$ $\log_6 \frac{1}{6} =$

Use your calculator to evaluate.

$\log 7 =$ $\log 0.05 =$ $log80 =$ $log0 =$

$\log(-2) =$

Evaluate

$\log_a a =$ $\log_x 1 =$ $\log_{2a} 4a^2 =$ $\log_b b^x =$

$\log_{2x} 8x^3 =$ $\log_e e^2 =$ $ln\, e^2 =$

Evaluate

$log\sqrt{10} =$ $log1 =$ $\log\ 1000 =$ $log0.1 =$

$\log_{100} 10\,000 =$

C12 - 8.1 - $log_b\ a$ =c in Exp/Log Form HW

Express in exponential form

$\log_2 8 = 3$

$\log_5 25 = 2$

$\log_3 27 = 3$

$\log_a b = c$

$\log_6 1 = 0$

$\log_2 \left(\frac{1}{2}\right) = -1$

$\log_{10} 1000 = 3$

$\log_4 2 = \frac{1}{2}$

$\log_{\frac{1}{4}} \left(\frac{1}{16}\right) = 2$

$\log_{\frac{1}{3}} 9 = -2$

$\log_7 (x + 2) = y$

$\log 100 = 2$

$\log_{64} 16 = \frac{2}{3}$

$q = \log_x z$

$\log_4 1 = 0$

$1 = \log_5 5$

$\log_2 4 + 2 = 4$

Express in logarithmic form

$2^3 = 8$

$5^2 = 25$

$64 = 8^2$

$8^{\frac{1}{3}} = 2$

$2^6 = 64$

$10^{-2} = 0.01$

$a = b^c$

$6^{-2} = \frac{1}{36}$

$1000 = 10^3$

$4^{-2} = \frac{1}{16}$

$\frac{1}{125} = 5^{-3}$

$x^y = z$

$18^0 = 1$

$4^1 = 4$

$\left(\frac{1}{5}\right)^2 = \frac{1}{25}$

C12 - 8.1 - Logs Restrictions HW

$\log x = 5$

$\log(x + 1) = 3$

$\log_2(2x - 3) = 5$

$\log_2(-x) = 5$

$\log_2(3 - x) = 5$

$\log_x 3 = 7$

$\log_{x-1} 2 = 4$

$\log_3(x^2 - 1) = 5$

$\log_3(x^2 - 9) = 5$

$\log_3(x^2 + 4) = 5$

$\log_x(x - 2) = 5$

$\log_x(x + 3) = 5$

$\log_2 x^2 = 4$

$2 \log_2 x = 4$

C12 - 8.2 - $\log_b x = c$, $\log_x a = c$ *HW*

Find x

$\log_2(x) = 3$ $\log_4 x = 3$ $\log_5 x = 2$ $\log_4 x = \frac{1}{2}$

$\log_5 x = 0$ $\log_5 x = -2$ $\log_3 x = -2$ $\log_{\sqrt{2}} x = 4$

Find x

$\log_2(x + 2) = 2$ $\log_3(x - 5) = 2$ $\log_{10}(x - 50) = 2$ $\log_5(20 + x) = 2$

$\log_5(x^2 + 100) = 3$ $\log_3(100 - x) = 4$ $\log_3(5x + 7) = 2$ $\log_5 2x = -5$

Find x

$\log_x(8) = 3$ $\log_x(144) = 2$ $\log_x(81) = 2$ $\log_x 5 = 1$

$\log_x 5 = 3$ $\log_x 125 = 3$ $\log_x \frac{1}{16} = 4$ $\log_x(64) = 3$

Find x

$\log_x 9 = \frac{1}{2}$ $\log_x 8 = \frac{2}{3}$ $\log_x 27 = \frac{3}{2}$ $\log_x \sqrt{27} = \frac{3}{2}$

$\log_x 4 = \frac{2}{3}$ $\log_x \frac{27}{8} = \frac{3}{2}$ $\log_x \frac{64}{27} = \frac{3}{2}$

C12 - 8.2 - $\log_b a = x$ *and Factoring HW*

Solve

$\log_4(16) = x$ $\log_8 16 = x$ $\log_2 64 = x$ $\log_2(8) = x$

$\log_{10} 100 = x$ $\log_7(343) = x$ $\log_4 \frac{1}{8} = x$ $\log_{\frac{1}{5}} 125 = x$

$\log_{81} 3 = x$ $\log_{16} 8 = x$ $\log_{\frac{1}{2}} 16 = x$ $\log_{\frac{1}{2}} 1 = x$

$\log_{\frac{1}{3}} \frac{1}{9} = x$ $\log_{\frac{1}{9}} \frac{1}{3} = x$ $\log_{\sqrt{2}} 4 = x$ $\log_2 \sqrt[4]{8} = x$

$\log_{2x} 16 = 2$ $log_{x+1} 9 = 2$ $log_{x+2} 1 = 2$ $log_{x-1} 4 = 2$

$\log_{x+2} 9 = 2$

C12 - 8.3 - Change of Base HW

June 18, 2014 7:07 PM

$\frac{log8}{log2} =$

$\frac{log125}{log5} =$

$\frac{\log_3 81}{log_3 9} =$

$\frac{\log_2 64}{log_2 4} =$

$\frac{\log_2 64}{log_2 4} =$

$\frac{\log_5 125}{log_5 5} =$

$\log_5 25 =$

$\log_3 81 =$

$\log_9 27 =$

$\log_{16} 64 =$

$\frac{1}{\log_{81} 3} =$

$\frac{1}{\log_{64} 4} =$

C12 - 8.4 - $\log_b m + \log_b n = \log_b mn \quad \log_b m - \log_b n = \log_b \frac{m}{n}$

Simplify, express as a single log

$log3 + log4 =$ $\log_2 5 + \log_2 6 =$ $\log_3 20 - \log_3 4 =$

$\log_4 64 - \log_4 16 =$ $log10 - log2 =$ $\log_2 5 + \log_2 3 + \log_2 4 =$

$\log_2 4 + \log_2 5 - \log_2 10 =$ $\log_3 4 + \log_3 20 - \log_3 10 =$

$log5 - log2 - log10 =$ $log5 - log2 + log10 =$

$log4 - log2 + log10 =$ $-log8 - log2 + log5 =$

Express as an addition of logs

$\log(4 \times 3) =$ $\log(2 \times 5 \times 7)$ $log4 =$ $log9 =$

$log10 =$ $log15 =$ $log21 =$ $log25 =$

$log30 =$ $log36 =$ $log20 =$

Express as a subtraction of logs

$\log\left(\frac{10}{3}\right) =$ $\log\left(\frac{3}{2}\right) =$ $log5 =$ $log7 =$

$\log 0.1 =$ $log0.5$

C12 - 8.4 - $\log_b m + \log_b n = \log_b mn \; log_b m - log_b n = log_b \frac{m}{n}$

Express in terms of $loga, logb, logc$

$logab =$ $\log\left(\frac{b}{c}\right) =$ $\log\left(\frac{a}{bc}\right) =$ $\log\left(\frac{ab}{c}\right) =$

$log100a^2b^3 =$ $\log_4 \frac{16a^2}{c} =$ $\log\left(\frac{a^3}{b\sqrt{c}}\right) =$ $\log \frac{c^2}{10a^2} =$

$\log(bc)^2 =$ $\log\left(a\sqrt{b}\right) =$ $\log\left(\sqrt{ab}\right) =$

C12 - 8.4 - $\log_b m + \log_b n = \log_b mn$ $log_b m - log_b n = log_b \frac{m}{n}$

Express in terms of $log3$ and $log4$.

$log12$ = $log36$ = $log48$ = $log120$ =

$log0.12$ = $\log\frac{9}{16}$ =

Simplify the expression.

$\log(x + 1) + \log 2$ = $\log(x^2) - logx$ = $\log n^2 - log\sqrt{n}$ =

$log\sqrt{m} + \log m^{\frac{3}{2}}$ = $\log_2 x - 2\log_2 8$ = $\log_3 x + 2\log_3 4$ =

$\log(x + 2) + \log(x + 3)$ = $\log(x^2 + 5x + 6) - \log(x + 3)$ =

C12 - 8.5 - Logs Equation HW

$log6 = logx - log3$

$log24 = logx + log3$

$log8 = log2 - logx$

**C12 - 8.4 - Log = Log Equation HW

$log\,2x = \log(x + 1)$

$log_2 x = \log_2(3 - x)$

$log\,x = \log(2x + 1)$

$log\,x = \log(x^2 - 2)$

$log\,2x = \log(x - 3)$

$\log_5(4x + 3) = log_5(3x - 2)$

$log\,x + logx = log4$

$\log_4 x + \log_4 x^2 = \log_4 27$

$\log_7 3x = \log_7(x^2 - 4)$

$log\,x^2 + logx^2 = log81$

$3\,log\,x + logx = log256$

$2\,log\,x + logx^2 = log9$

$log\,x^2 - logx = log5$

$3\log_7 x + \log_7 x^2 = \log_7 32$

$5\log_9 x - \log_9 x^2 = \log_8 8$

$3\log_9 x + \log_9 x^2 = \log_9 32$

$\log_3(x - 2) + \log_3(x - 3) = log12$

$\log_3(6x + 1) - \log_3(x - 1) = log5$

$\log_3(3x + 1) - \log_3(x - 2) = log4$

**C12 - 8.4 - Log Equation HW

$\log_2 x + \log_2 x = 2$

$\log_4 x + \log_4 x = 3$

$\log_2 x + \log_2 x^2 = 6$

$2\log_2 x - \log_2(x-2) = 3$

$\log_x 5 + \log_x 2 = 3$

$\log_{x^2} 128 - \log_{x^2} 2 = 3$

$\log_5(x^2-1) - \log_5(x+1) = 2$

$\log_{x+1} 27 - \log_{x+1} 3 = 2$

$\log_2 5x - \log_2(x+1) = 2$

$\log_{x-1} 1 + \log_{x-1} 4 = 2$

$\log_2(-x) + \log_2(3-x) = 2$

$\log_2 x + \log_2(x+2) = 2$

$\log_3 2x - \log_3(x-2) = 1$

$\log_3(3x-12) - \log_3 x = 2$

**C12 - 8.4 - Log Equation HW

$\log_3 2x - \log_3(x-2) = 1$

$\log_3(3x-12) - \log_3 x = 2$

$\log_2 x + \log_2(x-7) = 3$

$\log_2 x + \log_2(x+1) = 1$

$\log_2(2x+4) - \log_2(x+2) = x$

$\log_2 x + \log_2(x+4) = 5$

$\log_3 x + \log_3(x+2) = 1$

$\log_3 x + \log_3(x-6) = 3$

$\log_6 x + \log_6(x-5) = 2$

$\log_3(x^2+5x+6) - \log_3(x+2) = 1$

$2\log_5(x+2) - \log_5(x+2) = 1$

$\log_7(2x^2+7x+6) - \log_7(x+2) = 2$

**C12 - 8.4 - Log Equation Change Base HW

$\log_2 x + \log_4 x = 3$

$2\log_3 x - \log_9 x^2 = 2$

C12 - 8.3 - Equation Change of Base HW

$(\log_2 x)(\log_3 4) = 4$

$(\log_x 36)(\log_6 27) = 6$

$(\log_5 16)(\log_4 25) = x$

$(\log_5 x)(\log_4 25)(\log_7 16) = 8$

**C12 - Logs Factoring WS

$(logx)^2 + logx = 2$

$(logx)^2 = logx^5 + 4$

$2(logx)^2 - 3logx = -1$

$(logx)^2 - 9 = 0$

$(logx)^2 = 4$

$(logx)^2 - 7 = logx^6$

**C12 - Logs Exponent Equation HW

$2^{\log_2 5} = x$

$3^{\log_3 8} = x$

$2^{2\log_4 6} = x$

$3^{2\log_3 4} = x$

$4^{\log_2 6} = x$

$2^{\log_4 32} = x$

$2^{logx} = \frac{1}{4}$

$2^{-logx} = 8$

$3^{log2x} = \frac{1}{27}$

**C12 - Logs Substitution HW

C12 - 8.4 - Log Operation HW

Solve using your calculator or your brain.

$log5$ =

$log10$ =

$log240$ =

$log0$ =

$log100$ =

$log4528$ =

$log1$ =

$log0.2$ =

$log20$ =

$log-1$ =

$log1000$ =

$log9$ =

$log.01$ =

$log85$ =

$log0.1$ =

$log12345$ =

$log10^{12345}$ =

$log_5 12$ =

$log_8 3$ =

$log_2 8192$ =

$\log_2 128$ =

$log12^3$ =

$log25^2$ =

$log100^2$ =

$log10^{-2}$ =

$2log6^4$ =

$-log5^2$ =

$3log6^{-4}$ =

$2log10^{\frac{1}{2}}$ =

$3log12$ =

$2log25$ =

$2log100$ =

$-2log10$ =

Expand: Bring Exponent down in front and distribute

$log3^{x+4}$ =

$log8^{2x-1}$ =

$log8^{-x+1}$ =

$2log4^{x+2}$ =

Remove a greatest common Factor of x

$2xlog5 - xlog3$ =

$xlog7 - xlog2$ =

$xlog20 - xlog2$ =

C12 - 8.5 - Log Operation $\log_{b^n} a^n$ HW

Square the base and the log and evaluate

$\log_3 9$ $\log_2 4$ $\log_5 125$ $\log_7 49$

Take the base and the log to the exponent -1 $and\ evaluate$

$\log_{\frac{1}{2}} 8 =$ $\log_{\frac{1}{3}} 9 =$ $\log_{\frac{1}{4}} \frac{1}{2} =$ $\log_{\frac{1}{2}} \frac{1}{4} =$

Cube the base and the log

$\log_2 4 =$ $\log_3 4 =$

Change the base to 3

$\log_9 64 =$ $\log_{27} 8 =$ $\log_{\sqrt{3}} 2 =$

Change the base to 4

$\log_2 4 =$ $\log_{16} 25 =$ $\log_{\sqrt[3]{4}} 3 =$

C12 - 8.6 - Log/Delog Both Sides HW

Solve for x

$4 = 2^x$

$12 = 2^x$

$99 = 10^x$

$38 = 6^x$

$4 = 3^x$

$12 = 2^x$

$99 = 10^x$

$38 = 6^x$

$5 = 4^x$

$30 = 5^x$

$27 = 5^x$

$9^x = 76$

$7 = 2^{2x}$

$80 = 3^{2x}$

$1080 = 2^{5x}$

$180 = 5^{\frac{x}{2}}$

$5 = 2^{\frac{1}{x}}$

$7^{\frac{2}{x}}$

$18 = 2^{\frac{3}{x+1}}$

$40 = 5(3)^x$

$60 = 3(2)^x$

C12 - 8.6 - Log/Delog Both Sides HW

$4^{x+1} = 12$

$25 = 3^{x-2}$

$126 = 3^{x+1}$

$80 = 2^{3x-1}$

$2^{3-x} = 5^{x-2}$

$2^{2x-3} = 8^{x-1}$

$3^{2x+1} = 5^{x+1}$

$120 = 6(2)^{x+1}$

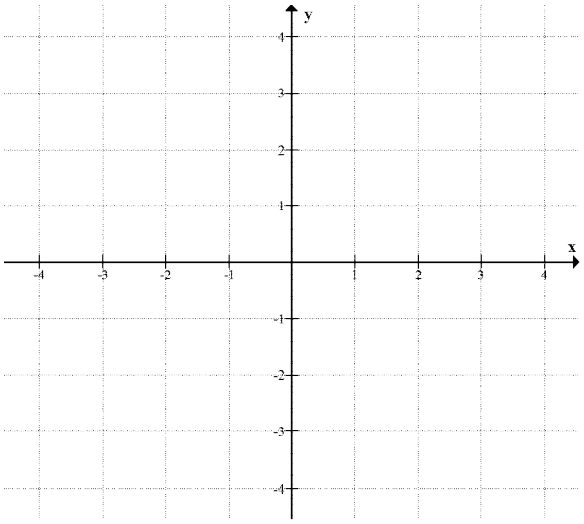
$80 = 4(2)^{3x-1}$

$25 = 4(3)^{x}$

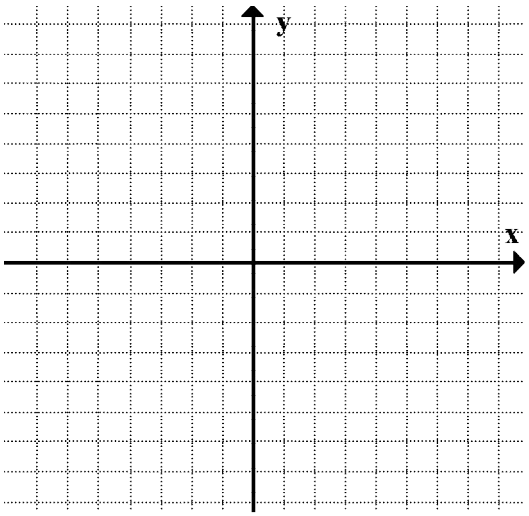
$62 = 5(3)^{2x-1}$

C12 - 8.7 - Log Graphs HW

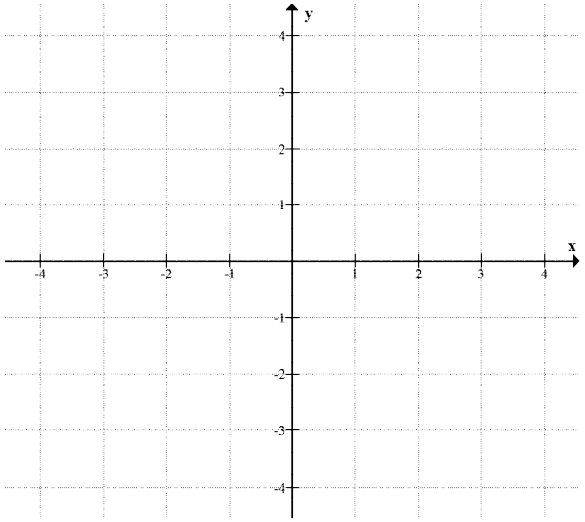
$Graph\ y = 2^x and \log_2 x\ on\ the\ same\ graph$



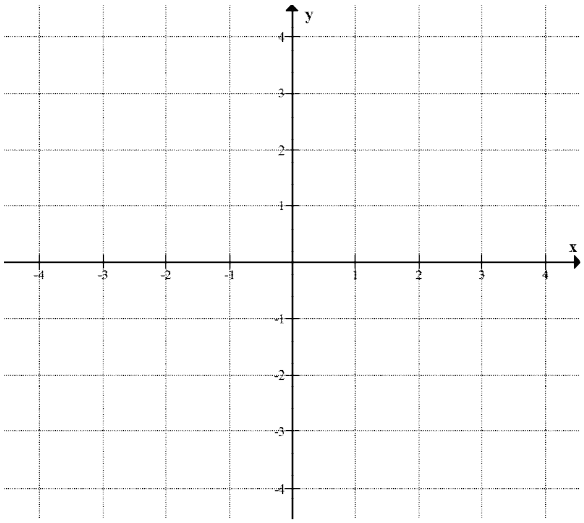
$Graph\ y = 3^x and \log_3 x\ on\ the\ same\ graph$



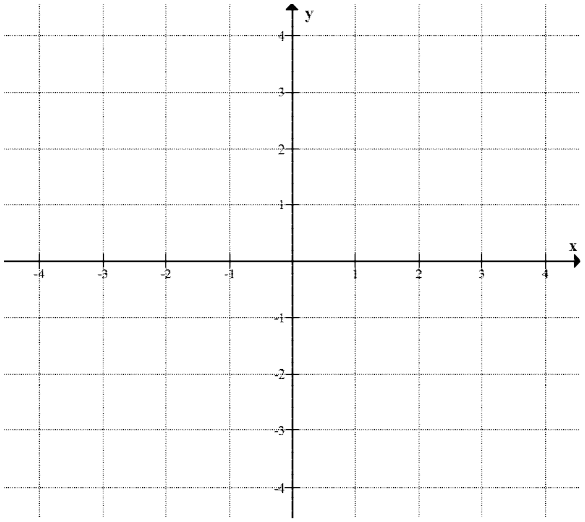
$Graph\ y = \log_2 x + 1$



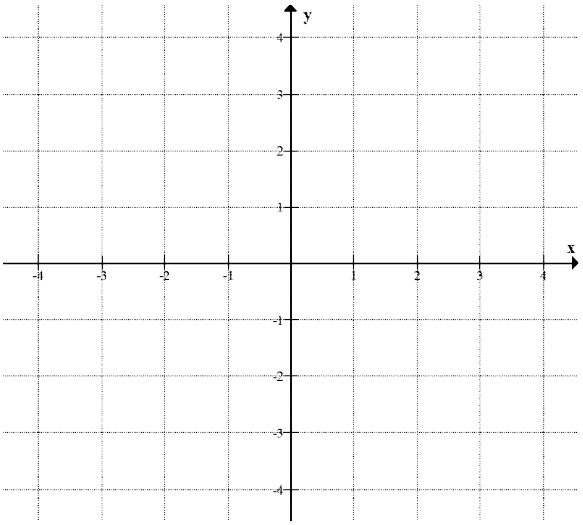
$Graph\ y = \log_2(x - 2)$



$Graph\ y = -\log_2 x$



$Graph\ y = \log_2(1 - x)$



C12 - 8.4 - Find Inverse HW

Determine the inverse of the following

$y = 8^x$

$y = 10^{x-2}$

$y = 5^{2x}$

$y = 3^{x+3}$

$y = 6^x + 7$

$y = 2^{2x-3} - 5$

$y = \log_4 x$

$y = \log_5(2x + 2)$

$y = \log_2(x + 3)$

$y = 5 - \log_3 2x$

$2 + y = \log_2(x)$

$C12 - 8.7 - Graph\ y = \log_b x\ RV$

Graph the log

$y = \log_2 x$ $y = \log_3 x$ $y = \log_2(-x)$ $y = \log_{\frac{1}{2}} x$

$y = \log_2(x + 2)$ $y = \log_2 x + 1$ $y = y = 3\log_2 x$ $y = -\log_2 x$

$y = \log_2(x - 3)$ $y = \log_2 x - 2$ $y = \log_3(2x + 2)$ $y = \log_2(x + 3) + 4$

$y = -3\log_2\left(\frac{x}{2} - 3\right) + 1$

$y = 2\log_2(x - 3) + 4$

Explain what each letter represents and does.

$y = alog\big(b(x - h)\big) + k$ a: b:

h: k:

Find the domain of the following.

$y = \log_3 x$ $y = \log_2(x + 3)$ $y = \log(2 - x)$ $y = \log(3x + 1)$

$y = \log_2(-x)$ $y = \log_2(x - 1)$ $y = \log_x 2$ $y = \log(2x - 3)$

$y = \log(\frac{x}{3} - 1)$ $y = \log_2 x + 2$ $y = \log_{x-1} 2$ $y = \log\left(\frac{x}{2} + 1\right)$

$y = -\log_2 x$ $y = \log_{x-2}(x - 1)$ $y = \log(2x + 4)$

How is the following related to $y = \log_2 x$?

$y = \log_2 x + 1$ $y = log_2(x - 2)$ $y = 2\log_2 x$ $y = \log_2 2x$

$y = \log_2 \frac{x}{2}$ $y = -\log_2 x$ $y = \log_2(-x)$ $y = -3\log_2(2x + 2) + 1$