C12 - 8.0 - Logs Forms/Solve/Graph/Inv/Words Rev

1) Change Forms.

$a)\ \log_b a = c$

$b)\ \log_2 8 = 3$

c) $\log 100 = 2$

$d)\ 5^2 = 25$

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

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

$g)\ 10^{-2} = 0.01$

2) Solve.

$a)\ \log_2 64 = x$

$b)\ \log_2\left(\frac{1}{4}\right) = x$

$c)\ \log_{\frac{1}{9}}\frac{1}{3} = x$

$d)\ \log_2 \sqrt[4]{8} = x$

$e)\ \log_1 49 = x$

f) $\log_5 x = -2$

$g)\ \log_{\sqrt{2}} x = 4$

3) Solve.

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

$b)\ \log_x(81) = 2$

$c)\ \log_x \frac{1}{16} = 4$

d) $\log_x \sqrt{27} = \frac{3}{2}$

$e)\ \log_x \frac{27}{8} = \frac{3}{2}$

f) $\log_{2x} 16 = 2$

$g)\ log_{x+2} 1 = 2$

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

4) State Restrictions.

a) $\log(x+1) = 3$

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

$c)\ \log_2(1-x) = 5$

d) $\log_x 3 = 7$

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

$f)\ \log_x(x-2) = 5$

$g)\ 2\log_2 x = 4$

5) Change Base.

$a)\ \frac{log8}{log2} =$

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

$c)\ \log_3 81 =$

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

$e)\ \log_9 64 =$

$f)\ \log_{\sqrt[3]{4}} 3 =$

6) Simplify.

$a)\ \log_2 4 + \log_2 5 - 2\log_2 10 =$

$b)\ -log8 - 3log2 + log5 =$

$c)\ 3\log_2 a + \frac{1}{4}\log_2 b - \frac{\log_2 c}{2} =$

$d)\ 2logx + 3log\sqrt{x} - logx^3$

7) Expand in Loga, Logb & Logc and #'s.

$a)\ log100a^2b^3 =$

b) $\log\left(\frac{a^3}{b\sqrt{c}}\right) =$

$c)\ \log(bc)^2 =$

d) $\log\left(a\sqrt{b}\right) =$

e) $2\log\frac{a^2}{b} =$

$f)\ \log_{10}\sqrt{\frac{a^2b}{c^4}} =$

8) Express in m & n if Log2=m and Log9=n

$a)\ log18 =$

$b)\ log600 =$

$c)\ log0.02 + 1 =$

9) Solve.

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

$b)\ \log_2 x + \log_4 x = 3$

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

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

10) Solve

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

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

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

11) Solve.

$a)\ 3\ log\ x + logx = log256$

$b)\ 5\log_9 x - \log_3 x = \log_8 8$

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

d) $\log_3(3x+1) - \log_3(x-2) = \log_3 4$

13) Solve

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

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

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

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

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14) Solve.

$a)\ (logx)^2 + logx = 2$

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

15) Solve

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

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

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

$d)\ \dfrac{1}{\log_3 x} - \log_x 27 = 2$

$e)\ \log_x 12 - \log_x(x-1) = 1$

$f)\ 2\log_x 2 - \log_2 x^2 = -3$

16) Solve

$\log_4(\log_x(\log_2 16) = -1$

$log_3(\log_2 x)^4 + log_{81}(\log_9 4)^4 = 1$

17) Solve

$a)\ \dfrac{log10^x}{10^{logx}} = x^2 + 2$

$b)\ 6^{\log_6 x} = \dfrac{1}{216}$

$c)\ 5^{2\log_5 x} = \sqrt{x}$

$d)\ B^{2\log_B x - log_B x} + 3 = 2x^2$

18) Solve.

$a)\ 12 = 2^x$

$b)\ 40 = 5(3)^x$

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

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

$e)\ 4^{x+1} = 12$

$f)\ 2^{3-x} = 5^{x-2}$

19) Solve

$a)\ 25 = 4(3)^x$

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

$c)\ 2^{\log_4 32} = x$

$d)\ 2^{logx} = \dfrac{1}{4}$

20) Graph/State the Domain and Range and Asymptote and find any Intercepts.

$a)\ y = \log_2 x + 1$

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

$c)\ y = -\log_3(-x - 3)) + 1$

21) Find the Inverse.

$a)\ y = 10^{x-2}$

$b)\ y = 2^{2x-3} - 5$

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

$d)\ y = 2\log_7(x + 3) + 1$

22) Find the Base "b" $y = \log_b x$

$\left(\dfrac{1}{4}, 2\right)$

23) How long to earn $3000 on $80000 at 6%/year?

24) How long to triple your money at 10%/year?

25) How long to grow $10 to $1000 compounded semi-annually at 12%?

26) An earthquake of magnitude 8 is 250 times as intense as an earth quake of what magnitude?

27) How long to grow 50 Bacteria to 9000 at a continuous growth rate of 0.04?

28) Find the half-life of a substance decay 80% of its original in 100 years?

29) A substance has a half-life of 9 years. How long to be twenty percent of its original?

30) A substance has a doubling time of 9 years. How long to be quadruple its original? Separately, find k if $F = Pe^{kt}$.

Change Forms
Solve/Rules
Restrictions
Solve Exponentials
Word Problems