

Homework Questions?

~~2e~~
~~5ce~~
~~7fe~~
 16
 20

$$2e) \log_x 0.04 = -2$$

$$x^{-2} = 0.04$$

$$x^{-2} = \frac{1}{25}$$

$$\frac{1}{x^2} = \frac{1}{25}$$

$$\therefore x = 5$$

$$5c) \log_5 2x + \frac{1}{2} \log_5 9 = 2$$

$$\log_5 2x + \log_5 9^{\frac{1}{2}} = 2$$

$$\log_5 2x + \log_5 3 = 2$$

$$\log_5 6x = 2$$

$$6x = 5^2$$

$$x = \frac{25}{6}$$

$$5e) 3 \log x - \log 3 = 2 \log 3$$

$$\log x^3 - \log 3 = \log 3^2$$

$$\log \frac{x^3}{3} = \log 3^2$$

$$\frac{x^3}{3} = 3^2$$

$$x^3 = 3^3$$

$$\Rightarrow x = 3$$

$$7ef \quad \log(x+2) + \log(x-1) = 1$$

$$\log[(x+2)(x-1)] = 1$$

$$(x+2)(x-1) = 10$$

$$x^2 + 1x - 2 = 10$$

$$x^2 + 1x - 12 = 0$$

$$(x+4)(x-3) = 0$$

$$\begin{array}{ccc} \swarrow & \downarrow & \therefore x=3 \\ \cancel{x=-4} & x=3 & \end{array}$$

$\frac{R}{x+2 > 0}$
 $x > -2$
 $x-1 > 0$
 $\boxed{x > 1}$

$$7f) \quad 3 \log_2 x - \log_2 x = 8$$

$$\log_2 x (3-1) = 8$$

$$\log_2 x (2) = 8$$

$$\log_2 x = 4$$

$$2^4 = x$$

$$9) \quad L = 10 \log \left(\frac{I}{I_0} \right) \quad I_0 = 10^{-12} \text{ W/m}^2$$

a)

$$50 = 10 \log \left(\frac{I}{10^{-12}} \right)$$

$$5 = \log(I (10^{12}))$$

$$5 = \log I + \log_{10} 10^{12}$$

$$5 = \log I + 12$$

$$-7 = \log I$$

$$10^{-7} = I$$

$$5 = \log I - \log 10^{-12}$$

$$5 = \log I - (-12)$$

$$12) \cdot \log_5 (x-1) + \log_5 (x-2) - \log_5 (x+6) = 0$$

$$\begin{array}{l} x > 1 \\ \boxed{x > 2} \\ x > -6 \end{array}$$

$$\log_5 [(x-1)(x-2)] - \log_5 (x+6) = 0$$

$$\log_5 \left[\frac{(x-1)(x-2)}{(x+6)} \right] = 0$$

$$\frac{(x-1)(x-2)}{(x+6)} = 1$$

$$\frac{(x-1)(x-2)}{(x+6)} - 1 = 0$$

$$\frac{(x-1)(x-2)}{(x+6)} - \frac{(x+6)}{(x+6)} = 0$$

$$\frac{x^2 - 3x + 2 - x - 6}{(x+6)} = 0$$

$$\frac{x^2 - 4x - 4}{(x+6)} = 0$$

$$x^2 - 4x - 4 = 0$$

$$20) \left(\frac{1}{2}\right)^{x+y} = 16$$

$$(2^{-1})^{x+y} = 2^4$$

$$2^{-x-y} = 2^4$$

$$\Rightarrow -x-y = 4$$

$$x+y = -4$$

$$\log_{x-y} 8 = -3$$

$$(x-y)^{-3} = 8$$

$$\sqrt[3]{\frac{1}{(x-y)^3}} = \sqrt[3]{8}$$

$$\frac{1}{x-y} = 2$$

$$1 = 2(x-y)$$

$$\frac{1}{2} = x-y$$

$$\frac{1}{2} + y = x$$

$$\left(\frac{1}{2} + y\right) + y = -4$$

$$2y + \frac{1}{2} = -4$$

$$2y = -4 - \frac{1}{2}$$

$$2y = -\frac{9}{2}$$

$$\boxed{y = -\frac{9}{4}}$$

$$x = \frac{1}{2} + \left(-\frac{9}{4}\right)$$

$$\boxed{x = -\frac{7}{4}}$$

Read examples on
pages 494 - 498

Homework:

pg 499-501

#1 to 4, 5ab, 6ab, 7, 8,
10, 13 to 15



$$16) \frac{\log(35-x^3)}{\log(5-x)} = 3$$

$$\log(35-x^3) = 3 \log(5-x)$$

$$\log(35-x^3) = \log(5-x)^3$$

$$35-x^3 = (5-x)^3$$

Expand, collect like terms +
refactor ;)

$$\log_2 x = y$$

$$2^y = x$$

$$2^1$$

$$2^2 = 4$$

