

## Homework Answers - p. 457

31. 9 dB      32. 13 dB      33. -2      34. 1

35. 6      36. 2      37. 2      38. 1

39. 1      40. -2      41. 1

73.  $\log_3 \sqrt[4]{2x}$       74.  $\log_x \frac{2\sqrt{y}}{z^3}$

75.  $\log \frac{27}{2}$       76.  $\log_4 \frac{m^x n^{1/y}}{p}$

77.  $\log_b \frac{\sqrt[3]{x^2} \sqrt[4]{y^3}}{5}$       78.  $\log \frac{\sqrt[4]{z}}{\sqrt[4]{5} \sqrt{5}}$

79.  $3 \log 2 + \frac{3}{2} \log x - 3 \log 5$

80.  $3 \log m - 4 \log n + 2 \log p$

81.  $\log 2 + \frac{1}{2} \log 4 + \frac{1}{2} \log r - \log s$

82.  $\frac{1}{2} \log_b x + \frac{2}{3} \log_b y - \frac{2}{5} \log_b z$

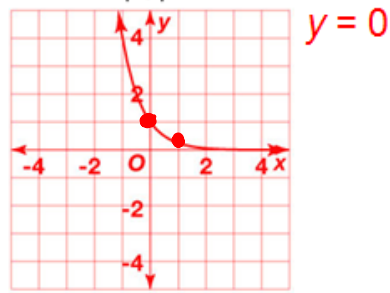
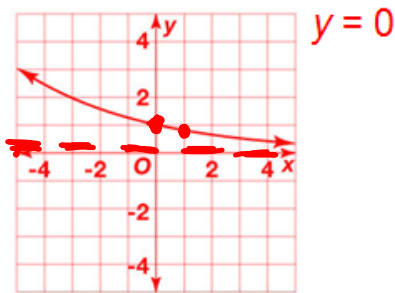
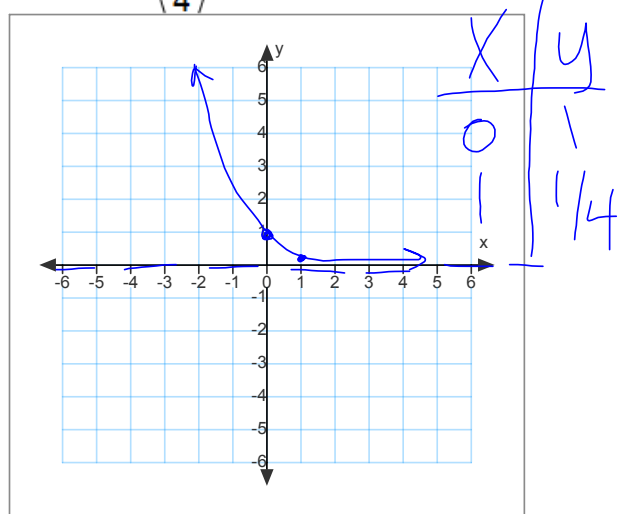
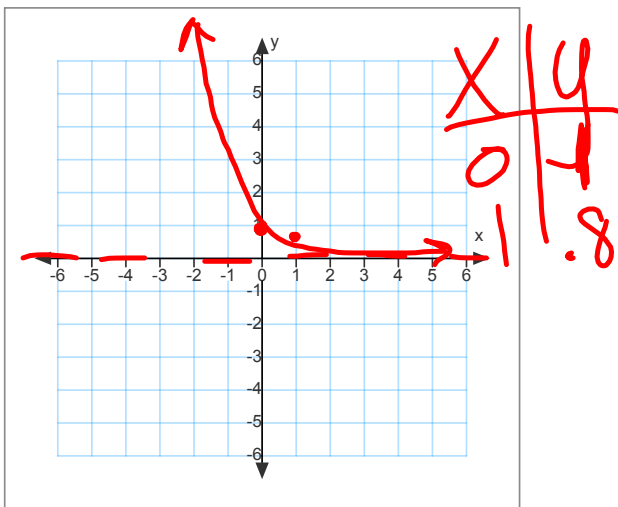
83.  $\frac{5}{2} \log_4 x + \frac{7}{2} \log_4 y - \log_4 z - 4 \log_4 w$

84.  $\frac{1}{2} \log (x^2 - 4) - 2 \log (x + 3)$

Sketch the graph of each function. Identify the horizontal asymptote.

1.  $y = (0.8)^x$

2.  $y = \left(\frac{1}{4}\right)^x$



Without graphing, determine whether each equation represents exponential growth or decay.

3.  $y = 15(7)^x$

4.  $y = 1285(0.5)^x$

$$y = a b^x$$

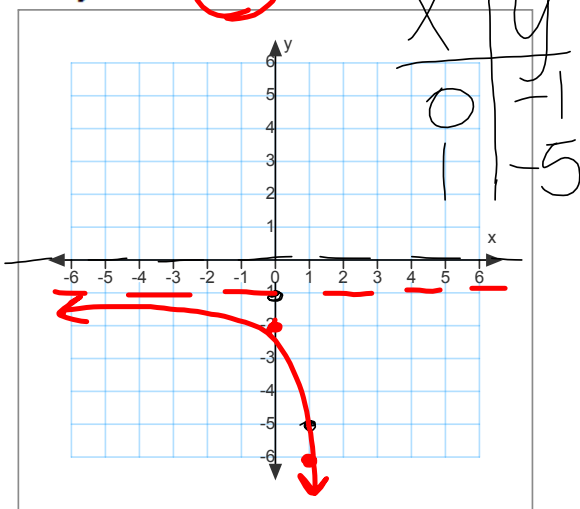
↑

growth

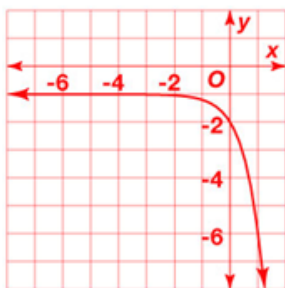
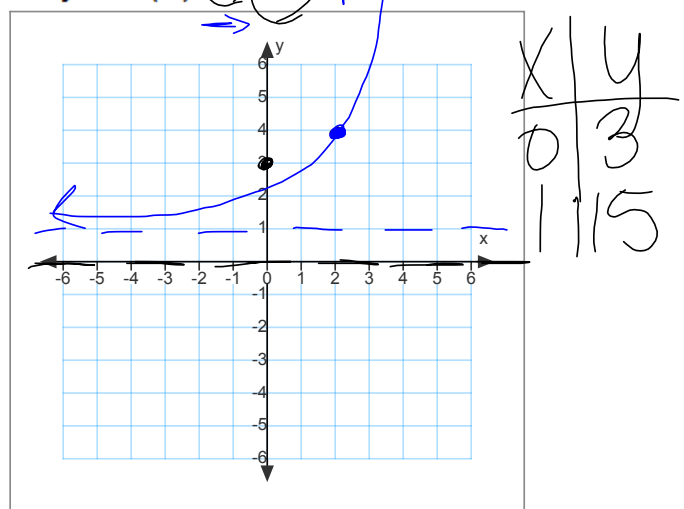
decay

Describe how the graph of each function relates to its parent function. Then graph the function.

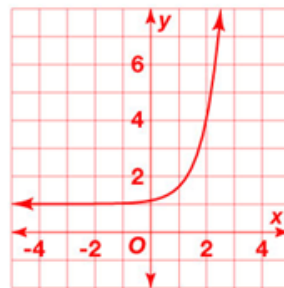
1.  $y = -5x^{-1} - 1$



2.  $y = 3(5)^{x-2} + 1$



reflected over the x-axis and translated down 1



rises more steeply, is translated 2 to the right and up 1

3. Use the formula  $A = Pe^{rt}$  to find the amount in a continuously compounded account where the principal is \$2000 at an annual interest rate of 5% for 3 years.

$$A = Pe^{rt}$$

$$2000e^{.05(3)}$$

$$A = \$2,323.67$$

Evaluate each logarithm.

1.  $\log_2 32$

$$2^x = 32$$

$$x = 5$$

2.  $\log_{10}(-100)$

$$10^x = -100$$

Not  
Possible

3.  $\log_5 \frac{1}{25}$

$$5^x = \frac{1}{25}$$

$$x = -2$$

Write each equation in exponential form.

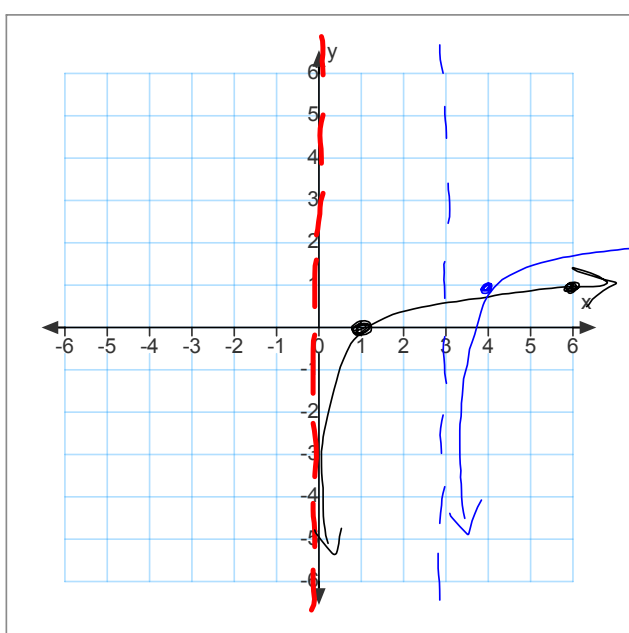
4.  $\log 0.01 = -2$

$10^{-2} = .01$

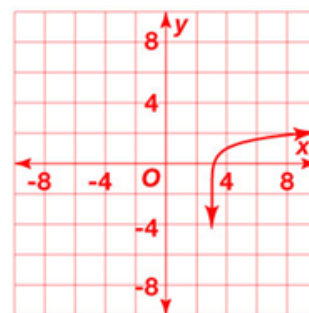
5.  $\log_3 27 = 3$

$3^3 = 27$

6. Graph  $y = \log_6(x - 3) + 1$ .



$(1, 0)$   $(b, 1)$





Write each expression as a single logarithm. State the property you used.

1.  $\log 12 - \log 3$

$$\log \frac{12}{3}$$

$$\log 4$$

2.  $3 \log_{11} 5 + \log_{11} 7$

$$\log_{11} 5^3 + \log_{11} 7$$

$$\log_{11} 125 + \log_{11} 7$$

$$\log_{11} 875$$

Expand each logarithm.

3.  $\log_c \frac{a}{b}$

$$\log_c a - \log_c b$$

4.  $\log_3 x^4$

$$4 \log_3 x$$

$$\begin{aligned} & \log_8 \sqrt{\frac{3x}{y}} \\ &= \log_8 \left( \frac{3x}{y} \right)^{1/2} \\ &= \frac{1}{2} \log_8 \frac{3x}{y} \\ &= \frac{1}{2} (\log_8 3x - \log_8 y) \\ &= \frac{1}{2} (\log_8 3 + \log_8 x - \log_8 y) \end{aligned}$$

Use the properties of logarithms to evaluate each expression.

5.  $\log 0.001 + \log 100$

$$\log_{10} 1 = X$$

$$10^x = .1$$

$$10^x = \frac{1}{10}$$

$$X = -1$$

6.  $\frac{1}{2} \log_y y$

$$\frac{1}{2} \log_6 6$$

$$\frac{1}{2} (1) = \frac{1}{2}$$

Homework:

WS 8.1-8.4 Review #1-30 all

Quiz on Block Day

