

**Logarithmic Functions (7.4-7.5) Review**

Advanced Algebra with Trig, Glawe

Name: \_\_\_\_\_

P : \_\_\_\_\_

1)  $\log y =$

2)  $\ln y =$

**Rewrite the equation in logarithmic form.**

3)  $4^3 = 64$

4)  $16^{1/2} = 4$

5)  $3^{-4} = \frac{1}{81}$

**Rewrite the equation in exponential form.**

6)  $\log_2 16 = 4$

7)  $\log_{100} 1 = 0$

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

**Evaluate the logarithm. No decimals.**

9)  $\log_3 27 =$

10)  $\log_5 5 =$

11)  $\log_{36} 6 =$

12)  $\log_{\frac{1}{4}} 256 =$

**Simplify the following expressions.**

13)  $2^{\log_2 -3x} =$

14)  $e^{\ln 4} =$

15)  $\log_3 3^{x^2} =$

16)  $\log_7 49^{4x} =$

**Find the inverse of the given function.**

17)  $y = \log \frac{5x}{4}$

18)  $y = 2\ln (x + 6)$

19)  $y = e^{x-3}$

20)  $y = \log_2 x + 4$

**Expand the logarithmic expression.**

21)  $\log_7 \frac{4x^2}{y}$

22)  $\ln \frac{2}{xy^3}$

Condense the following logarithmic expressions.

23)  $2 \log_4 y - 2 \log_4 3 - 3 \log_4 x$

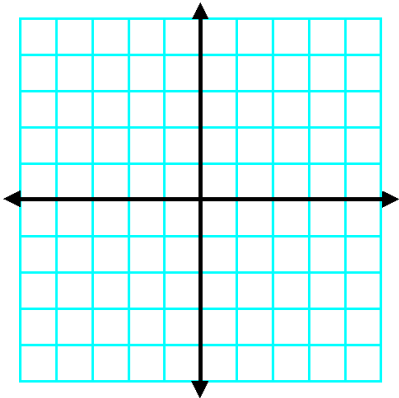
24)  $4 \ln 3 + \ln \frac{1}{3} - 5 \ln x + \ln y$

Graph the logarithmic function. Fill in the table of values for  $y = \log_b x$  and  $y = \log_b(x - h) + k$ . Then identify the domain, range and asymptote. Sketch the asymptote on the graph. \*Three of your four points should be integers (not decimals)\*

25) Graph  $y = \log_3(x - 2) + 1$

x	y

x	y



Domain: \_\_\_\_\_

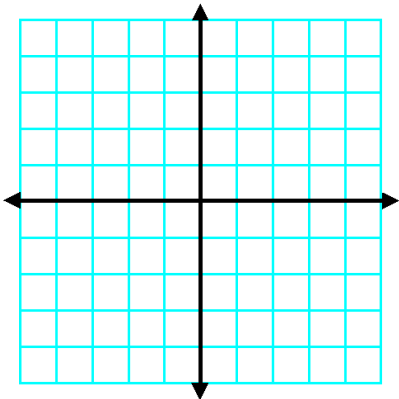
Range: \_\_\_\_\_

Asymptote: \_\_\_\_\_

26) Graph  $y = \log_{1/2}(x + 1) - 3$

x	y

x	y



Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Asymptote: \_\_\_\_\_

27) The Richter scale is used for measuring the magnitude of an earthquake. The Richter magnitude  $R$  is given by the function  $R = 0.67 \log(0.37E) + 1.46$  where  $E$  is the energy (in kilowatt-hours) released by the earthquake. In 1999, an earthquake with the magnitude of 5.9 occurred in Athens, Greece. How much energy did that earthquake release?