Name:
Date: Block:

Problem Set 5.4

Rewrite the equation in exponential form.

1] $\log_7 49 = 2$

2] $\log_5 125 = 3$

3] $\log_4 \frac{1}{4} = -1$

4] $\log_2 16 = 4$

5] $\log_{16} 4 = \frac{1}{2}$

6] $\log_3 \frac{1}{9} = -2$

Rewrite the equation in logarithmic form.

7] $13^2 = 169$

8] $9^{3/2} = 27$

9] $4^{-3} = \frac{1}{64}$

10] $10^{-3} = 0.001$

11] $64^{\frac{1}{2}} = 8$

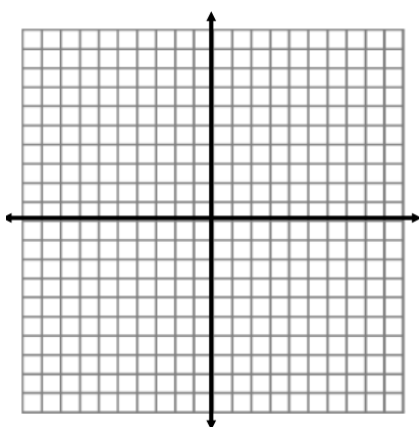12] $9^{-2} = \frac{1}{81}$

13] $12^2 = 144$

14] $\left(\frac{1}{12}\right)^2 = \frac{1}{144}$

Evaluate the logarithm without using a calculator. Show work to support your answer.
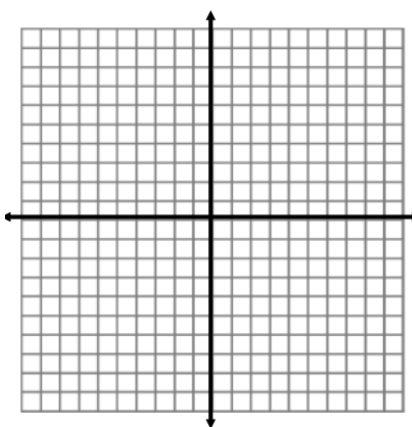
15] $\log_9 81 =$	16] $\log_{27} 3 =$	17] $\log_4 32 =$
18] $\log_8 1 =$	19] $\ln e^4 =$	20] $\log_8 4 =$
21] $\log_3 \frac{1}{3} =$	22] $\log 1000 =$	23] $\log_{\frac{1}{2}} 128 =$
24] $\log_4 2 =$	25] $\log_{25} 125 =$	26] $\log_3 \frac{1}{243} =$
27] $\log_4 64 =$	28] $\log_{64} 4 =$	29] $\log_6 \frac{1}{216} =$

30) Graph the logarithmic functions. List at least 2 points on the graph of f(x). List the domain, range, and asymptotes as they apply.

a) f(x) = $log_5 x$

b) f(x) = $log_3(x + 9) - 5$

31 – 33] Use the definition of the logarithmic function to solve for the value of x.

31. (a) $\log_5 x = 4$

(b) $\log_{10} 0.1 = x$

32. (a) $\log_4 2 = x$

(b) $\log_4 x = 2$

33. (a) $\log_x 1000 = 3$

(b) $\log_x 25 = 2$

34 – 35] Use the Change of Base Formula and a calculator to evaluate the logarithm, correct to six decimal places. Use either natural or common logarithms.

34. $\log_2 5$

35. $\log_5 2$