Name _____
5.4 Practice

Change each exponential expression to an equivalent expression involving a logarithm.

1. $2^x = 7.2$
2. $3^x = 4.6$
3. $e^x = 8$
4. $e^{2.2} = M$

Change each logarithmic expression to an equivalent expression involving an exponent.

5. $\log_b 4 = 2$
6. $\log_3 N = 2.1$
7. $\ln x = 4$

Find the exact value of each logarithm without using a calculator.

8. $\log_3 (1/9)$
9. $\log_5 25$
10. $\ln e^3$

Find the domain of each function.

11. $f(x) = 3 - 2\log_4 \frac{x}{2}$
11. $f(x) = \sqrt{\ln x}$
12. $g(x) = \frac{1}{\ln x}$

Graph each logarithmic function. Determine the domain, range, and vertical asymptote of each.

13. $y = \log_{1/2} x$
14. $f(x) = -\ln(-x)$
15. $g(x) = \log (x-4)$

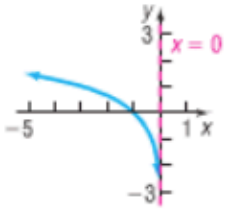
16. (#63-70)

In Problems 63–70, the graph of a logarithmic function is given. Match each graph to one of the following functions:

(a) $y = \log_3 x$ *(b)* $y = \log_3(-x)$ *(c)* $y = -\log_3 x$ *(d)* $y = -\log_3(-x)$

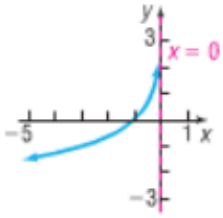
(e) $y = \log_3 x - 1$ *(f)* $y = \log_3(x - 1)$ *(g)* $y = \log_3(1 - x)$ *(h)* $y = 1 - \log_3 x$

63.



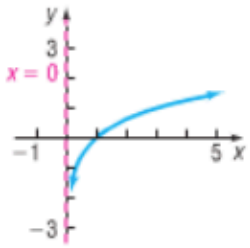
64.

65.

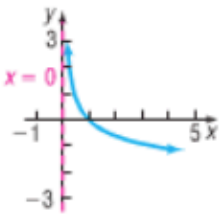


66.

67.

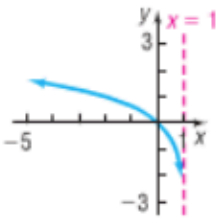


68.



69.

70.



Solve each equation.

17. $\log_3 (3x-2) = 2$

18. $\ln e^{-2x} = 8$

19. $\log_6 36 = 5x + 3$

20. $e^{-2x+1} = 13$

21. $\log_3 3^x = -1$