

Rewrite the equation in exponential form.

1. $\log_2 16 = 4$

2. $\log_3 \frac{1}{9} = -2$

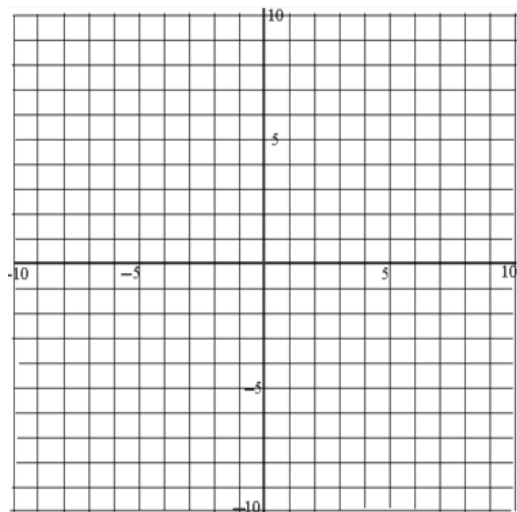
Rewrite the equation in logarithmic form.

3. $4^{-\frac{1}{2}} = 2$

4. $10^4 = 10000$

Graph the function. Then state the domain and range.

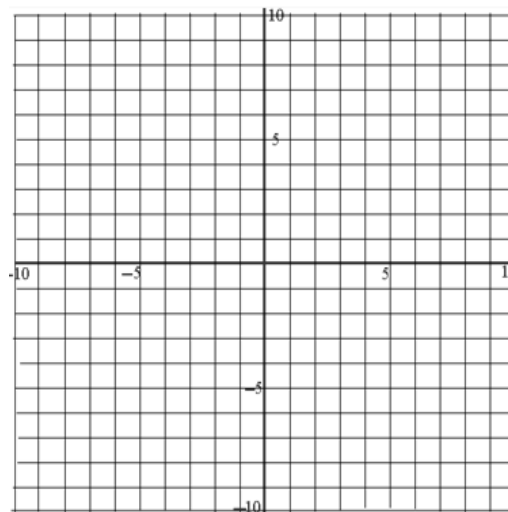
5. $h(x) = \log_3(x + 2)$



Domain: _____

Range: _____

6. $y = \ln x - 1$



Domain: _____

Range: _____

Find the inverse of the function.

7. $y = \ln x$

8. $y = \log_6(x + 2)$

9. $y = \log_3 3x - 5$

Evaluate the logarithm without using a calculator.

10. $\log_9 81$

11. $\log_8 1$

12. $\log_3 \frac{1}{3}$

13. $\log_4 2$

14. $\log_{27} 3$

15. $\log_4 4^{\frac{2}{3}}$

Use $\log 4 \approx 0.602$ and $\log 7 \approx 0.845$ to evaluate with following logarithms without a calculator.

16. $\log 28$

17. $\log \frac{1}{4}$

18. $\log \frac{49}{64}$

Expand the following expressions.

19. $\log \frac{2x}{5}$

20. $\log_7 x^2 y$

21. $\ln \sqrt{xy}$

Condense the following expressions.

22. $\log 4 + 3 \log x + \log y$

23. $3 \log_8 3 - \log_8 x - 2 \log_8 9$

24. $\ln 6 - \ln 3 + 2 \ln x$

Use your calculator to evaluate the following logarithms. Round your answer to three decimal places.

25. $\log_7 12$

26. $\log_5 0.04$

27. $\log_{1/3} 0.004$

Solve the following equations. Check for extraneous solutions.

28. $10^{x+2} - 12 = 22$

29. $\log_7(2 - x) = \log_7 5x$

30. $9^{2x} = 3^{2x+4}$

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

32. $8^{x-1} = \left(\frac{1}{2}\right)^{2x-1}$

33. $\log_6(2x - 6) + \log_6 x = 2$
