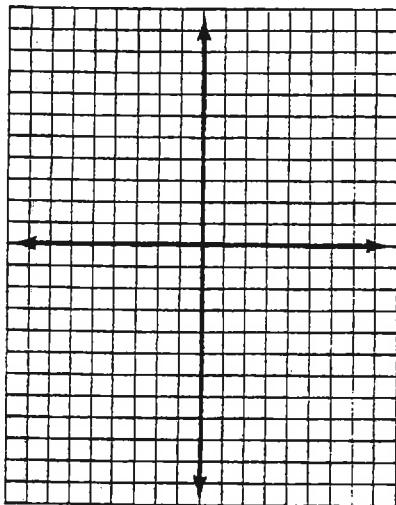


Lesson 7-1

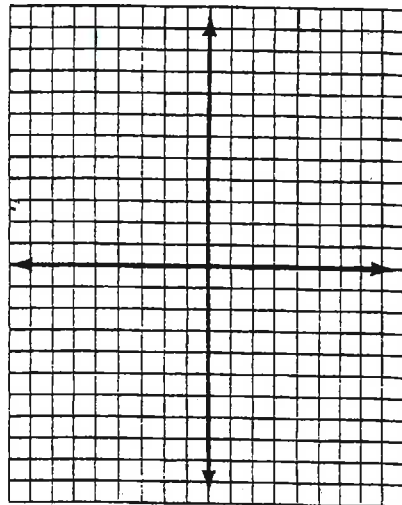
Graph each equation.

1. $y = 3^x$

1.



2.



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

Without graphing, determine whether each equation represents exponential growth or exponential decay. Then find the y -intercept.

3. $y = 10^x$

4. $y = 1.023(0.98)^x$

5. $y = 2\left(\frac{9}{10}\right)^x$

6. $y = 9.2(2.3)^x$

7. Mr. Andersen put \$1000 into an account that earns 4.5% annual interest. The interest is compounded annually and there are no withdrawals. How much money will be in the account at the end of 30 years?

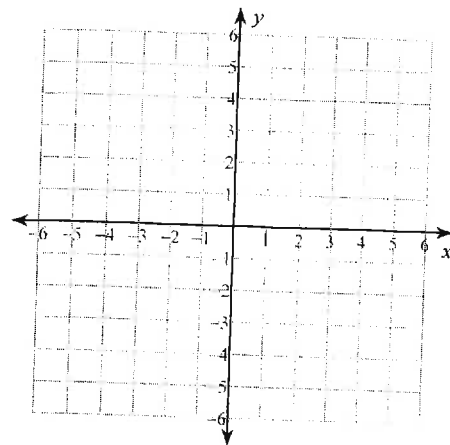
8. A manufacturer bought a new rolling press for \$48,000. It has depreciated in value at an annual rate of 15%. What is its value 5 years after purchase? Round to the nearest hundred dollars.

Lesson 7-2

Graph each function as a transformation of its parent function.

9. $y = 3^x - 1$

*Must sketch
parent function
first!*



10. You place \$900 in an investment account that earns 6% interest compounded continuously. Find the balance after 5 years.

Lesson 7-3

Write each equation in logarithmic form.

11. $100 = 10^2$

12. $9^3 = 729$

13. $64 = 4^3$

14. $625^{\frac{1}{4}} = 5$

15. $2^{-5} = \frac{1}{32}$

16. $6^2 = 36$

Evaluate each logarithm.

17. $\log 1000$

18. $\log_4 256$

19. $\log_{27} 9$

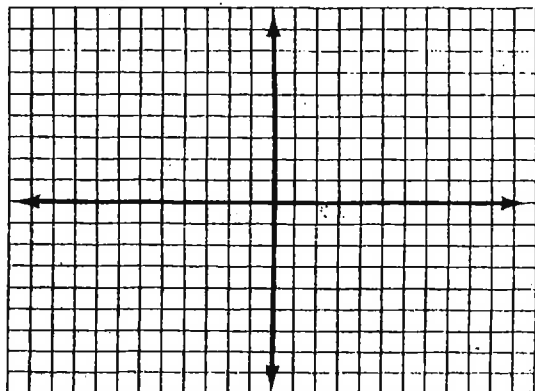
20. $\log_{\frac{1}{3}} 256$

21. $\log_{125} 625$

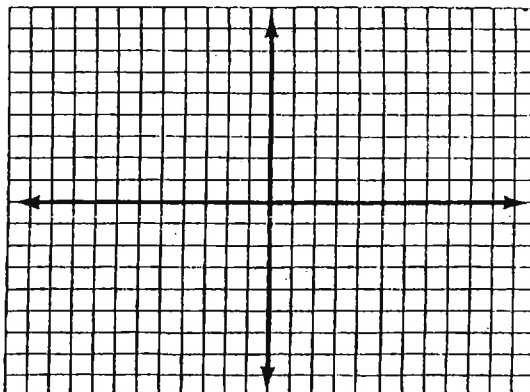
22. $\log_8 \frac{1}{32}$

Graph each logarithmic function.

23. $y = \log_8 x$



24. $y = \log_4 (x + 1)$



Lesson 7-4

Write each expression as a single logarithm.

25. $\log 8 + \log 3$

26. $4(\log_2 x + \log_2 3)$

27. $3 \log x + 4 \log x$

28. $\log 4 + \log 2 - \log 5$

Expand each logarithm.

29. $\log_b 2x^2y^3$

30. $\log_b (4mn)^5$

31. $\log_b \frac{x^2}{2y}$

32. $\log_b \frac{(xy)^4}{2}$

33. Use the properties of logarithms to evaluate $\log_8 6 - \log_8 15 + \log_8 20$.

Lessons 7-5 and 7-6

Solve each equation.

34. $\sqrt[3]{y^2} = 4$

35. $2 - 4^x = -62$

36. $\log x + \log 2 = 5$

37. $\log_3 (x + 1) = 4$

38. $e^x = 5$

39. $e^{\frac{x}{4}} = 5$

40. $\ln x - \ln 4 = 7$

41. $\log 4x = -1$

42. $e^{3x} = 20$

Simplify each expression.

43. $5 \ln 1$

44. $\ln e^2$

45. $\frac{1}{\ln e^{20}}$

46. $\frac{\ln e}{3 \ln e^3}$

47. $2 \ln e^{-5}$

48. $\frac{3 \ln e^4}{2 \ln e^6}$

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Lesson 8-4

Simplify. State any restrictions on the variables.

1. $\frac{5x^2y}{10xy^4}$

2. $\frac{4d^2 + 8d}{2d}$

3. $\frac{x^2 + 9x + 18}{x + 6}$

4. $\frac{x^2 + 3x + 2}{x - 1} \cdot \frac{1 - x}{x + 2}$

5. $\frac{x^2 - 2x - 8}{x + 3} \div \frac{x - 4}{x + 3}$

6. $\frac{2x^2 + 5x - 3}{x^2 - 4x} \cdot \frac{2x^3 - 8x^2}{x^2 + 6x + 9}$

7. $\frac{3x + 1}{x^2 - 6x - 6} \div \frac{6x^2 + 11x + 3}{x^2 + 4x + 4}$

8. $\frac{3x^4 - x^3 - 2x^2}{6x^2 - 2x - 4}$

Simplify each sum or difference. State any restrictions on the variables.

9. $\frac{6x + 1}{x + 2} + \frac{2x - 5}{2x + 4}$

10. $\frac{8}{x^2 - 25} + \frac{9}{x - 5}$

11. $\frac{x - 3}{x^2 + 3x} + \frac{7}{x + 3}$

12. $\frac{3x}{x^2 + 5x + 6} - \frac{2x}{x^2 + 8x + 16}$

$$13. \frac{2}{x^2-1} - 3$$

$$14. \frac{2x}{x-5} - \frac{x}{x+7}$$

Lesson 8-6

Solve each equation. Check each solution.

$$15. \frac{x}{4} = \frac{x+1}{3}$$

$$16. \frac{2}{x^2-1} = \frac{4}{x+1}$$

$$17. \frac{3x}{5} + \frac{4}{x} = \frac{4x+1}{5}$$

$$18. \frac{3x}{x-2} = 4 + \frac{x}{5}$$

$$19. x + \frac{x}{4} - \frac{x}{5} = 21$$

$$20. \frac{3}{x+4} + \frac{5}{4} = \frac{18}{x+4}$$