

Chapter 7 (7.1-7.7)

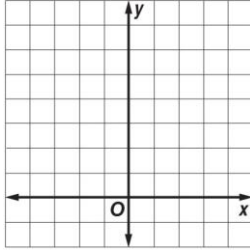
Study Guide

Name: _____

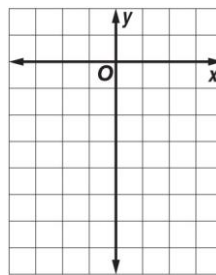
Date: _____ Period: _____

Make a table of values and graph the functions. State whether the graph is exponential growth or exponential decay.

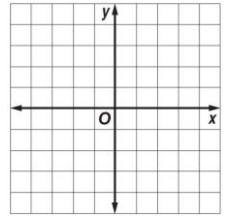
1. $y = \frac{1}{3}(3)^x$



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



3. $y = 3(3)^x$



Solve each equation.

4. $3^{5x} = 27^{2x-4}$

5. $9^{3c+1} = 27^{3c-1}$

6. $49^{x+5} = 7^{8x-6}$

Write each equation in exponential form or each equation in logarithmic form.

7. $\log_{32} 8 = \frac{3}{5}$

8. $\log_2 64 = 6$

9. $\log_6 216 = 3$

10. $4^6 = 4096$

11. $2^8 = 256$

12. $25^{\frac{3}{2}} = 125$

Evaluate each expression.

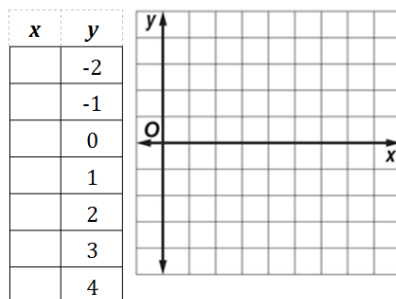
13. $\log_{121} 11$

14. $\log_{32} 2$

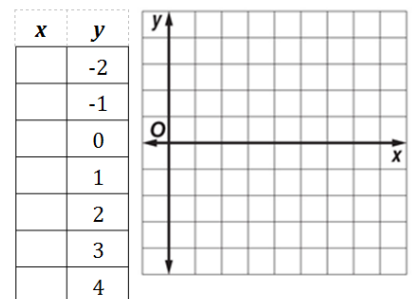
15. $\log_8 64$

Convert to an exponential. Complete a table. Graph each function.

16. $y = \log_6 x$



17. $y = \log_{\frac{1}{4}} x$



Solve each logarithmic equation.

19. $\log_3 (4x - 17) = 5$

21. $\log_{13} (x^2 - 4) = \log_{13} 3x$

20. $\log_9 x = \frac{5}{2}$

22. $\log_3 (x - 5) = \log_3 (3x - 25)$

Solve the following logarithmic equations using the Product, Quotient, and Power Properties.

27. $4 \log_2 x + \log_2 5 = \log_2 405$

30. $\log_6 2c + \log_6 8 = \log_6 80$

28. $\log_{10} (x + 3) + \log_{10} x = \log_{10} 4$

31. $\log_{10} (c - 1) + \log_{10} c = \log_{10} (c - 1)$

29. $\log_{10} 4 + \log_{10} w = 2$

32. $\log_{10} u = \frac{3}{2} \log_{10} 4$

Use a calculator to evaluate each expression to the nearest ten-thousandth.

33. $\log 18$

34. $\log 39$

35. $\log 120$

Solve each "unsolvable" equation. Round to the nearest ten-thousandth.

36. $4^{3x} = 12$

39. $7^{3x-1} = 21$

42. $3.6^{4x-1} = 85.4$

37. $6^{x+2} = 18$

40. $2.4^{x+4} = 30$

43. $2.9^{a-4} = 8.1$

38. $5^{4x-2} = 120$

41. $6.5^{2x} = 200$

44. $33.3 = 13^x$

Express each logarithm in terms of common logarithms. Then approximate its value to the nearest ten-thousandth.

45. $\log_3 16$

47. $\log_5 35$

49. $\log_{12} 200$

46. $\log_2 40$

48. $\log_4 22$

50. $\log_2 50$

Write an equivalent exponential or logarithmic equation.

51. $e^{15} = x$

52. $e^{3x} = 45$

53. $\ln 20 = x$

54. $\ln x = 8$

Solve each equation. Round to the nearest ten-thousandth.

55. $e^{4x} = 120$

59. $\ln(x+3) - 5 = -2$

63. $2e^{3x} + 5 = 2$

56. $e^x = 25$

60. $e^{-8x} = 50$

64. $6 + 3e^{x+1} + 1 = 21$

57. $e^{x-2} + 4 = 21$

61. $e^{4x-1} - 3 = 12$

65. $\ln(2x-5) = 8$

58. $\ln 6x = 4$

62. $\ln(5x+3) = 3.6$

66. $\ln 5x + \ln 3x = 9$