

Chapter 7

7.1 Graph the function. State the domain and range.

1. $y = \left(\frac{4}{3}\right)^x$ 2. $y = -2 \cdot 2^x$ 3. $y = 3^{x-3} - 2$ 4. $y = \frac{1}{4} \cdot 3^{x+1} + 2$

7.2 Graph the function. State the domain and range.

5. $y = \left(\frac{3}{5}\right)^x$ 6. $y = -2\left(\frac{1}{4}\right)^x$ 7. $y = (0.8)^{x-3} - 2$ 8. $y = 2\left(\frac{2}{3}\right)^x + 1$

7.3 Simplify the expression.

9. $e^{-3} \cdot e^{-8}$ 10. $(2e^{2x})^{-5}$ 11. $\sqrt{81e^{8x}}$ 12. $\frac{28e^{3x}}{21e^{-x}}$

7.3 Graph the function. State the domain and range.

13. $y = 0.5e^{3x}$ 14. $y = 2e^{-x} - 2$ 15. $y = 1.5e^{x+1} + 3$ 16. $y = e^{3(x-2)} + 1$

7.4 Evaluate the logarithm without using a calculator.

17. $\log_4 \frac{1}{16}$ 18. $\log_6 6$ 19. $\log_5 125$ 20. $\log_{3/4} \frac{64}{27}$

7.4 Simplify the expression.

21. $5^{\log_5 x}$ 22. $10^{\log 9}$ 23. $\log_4 16^x$ 24. $e^{\ln 5}$

7.4 Graph the function. State the domain and range.

25. $y = \log_7 x$ 26. $y = \log_{1/2} (x - 4)$ 27. $y = \log_5 x + 3$ 28. $y = \log_3 (x - 2) + 1$

7.5 Expand the expression.

29. $\log_5 \frac{2x}{5}$ 30. $\log \frac{100x^2}{y}$ 31. $\ln 20x^3y^2$ 32. $\log_2 \sqrt[3]{8x^4}$

7.5 Condense the expression.

33. $\log_4 20 + 4 \log_4 x$ 34. $\log 7 + 2 \log x - 5 \log y$ 35. $0.5 \ln 100 - 2 \ln x + 8 \ln y$

7.5 Use the change-of-base formula to evaluate the logarithm.

36. $\log_2 5$ 37. $\log_4 80$ 38. $\log_5 100$ 39. $\log_7 27$

7.6 Solve the equation. Check for extraneous solutions.

40. $2^{4x+2} = 8^{x+2}$ 41. $\left(\frac{1}{9}\right)^{x-3} = 3^{3x+1}$ 42. $7^{9x} = 18$
43. $\ln(3x+7) = \ln(x-1)$ 44. $\log_5(3x+2) = 3$ 45. $\log_6(x+9) + \log_6 x = 2$

7.7 Write an exponential function $y = ab^x$ whose graph passes through the given points.

46. (1, 8), (2, 32) 47. (1, 3), (3, 12) 48. (2, -9), (5, -243) 49. (1, 4), (2, 4)

7.7 Write a power function $y = ax^b$ whose graph passes through the given points.

50. (2, 2), (5, 16) 51. (3, 27), (6, 432) 52. (1, 4), (8, 17) 53. (5, 36), (10, 220)