Chapter 11

11.1 Graph the function and identify its domain and range. Compare the graph with the graph of $y = \sqrt{x}$.

1. $y = 6\sqrt{x}$

2. $y = \frac{1}{5}\sqrt{x}$

3. $y = -8\sqrt{x}$

4. $y = -\frac{2}{5}\sqrt{x}$

5. $y = \sqrt{x} + 3$

6. $y = \sqrt{x} - 5$

7. $y = \sqrt{x - 2}$

8. $y = \sqrt{x + 5}$

9. $y = \sqrt{x - 4} + 2$

11.2 Simplify the expression.

10. $\sqrt{98}$

11. $\sqrt{300}$

12. $\sqrt{128x^3}$

13. $\sqrt{17} \cdot \sqrt{17}$

14. $\sqrt{112} \cdot \sqrt{63}$

15. $\sqrt{11g} \cdot 5\sqrt{g}$

16. $4m\sqrt{m} \cdot \sqrt{5m}$

17. $\sqrt{27x^5} \cdot \sqrt{48x}$

18. $\sqrt{\frac{19}{49}}$

19. $\sqrt{\frac{1}{6x^2}}$

20. $\frac{3}{\sqrt{5}}$

21. $\frac{\sqrt{7}}{\sqrt{8k}}$

22. $\sqrt{\frac{5}{27}}$

23. $2\sqrt{3} + \sqrt{7} + \sqrt{3}$

24. $2\sqrt{11} + \sqrt{99}$

25. $\sqrt{45} + 3\sqrt{20}$

26. $\sqrt{3}(12 - \sqrt{15})$

27. $3\sqrt{6}(4\sqrt{6} - \sqrt{600})$

28. $(6 - \sqrt{7})(6 - \sqrt{7})$

29. $(4 - \sqrt{13})(10 + \sqrt{13})$

11.3 Solve the equation. Check for extraneous solutions.

30. $6\sqrt{x} - 30 = 0$

31. $\sqrt{8x} + 5 = 13$

32. $\sqrt{x + 3} + 5 = 16$

33. $3\sqrt{4x + 1} - 2 = 25$

34. $\sqrt{3x - 12} = \sqrt{5x - 26}$

35. $\sqrt{2x + 10} - \sqrt{x + 7} = 0$

36. $\sqrt{\frac{1}{2}x + 10} - \sqrt{2x - 8} = 0$

37. $x = \sqrt{11x - 10}$

38. $x = \sqrt{20 - x}$

39. $5x = \sqrt{20x - 3}$

40. $\sqrt{-4x + 5} = 3x$

41. $x + 1 = \sqrt{6 - 2x}$

11.4 Let a and b represent the lengths of the legs of a right triangle, and let c represent the length of the hypotenuse. Find the unknown length.

42. $a = 6, b = 8$

43. $a = 10, c = 26$

44. $b = 40, c = 41$

45. $a = 2, c = 5$

46. $a = 4, b = 7$

47. $b = 8, c = 11$

11.4 Tell whether the triangle with the given side lengths is a right triangle.

48. $a = 10, b = 24, c = 26$

49. $a = 2, b = 4, c = 6$

50. $a = 14, b = 15, c = 21$

51. $a = 16, b = 30, c = 34$

52. $a = 1.4, b = 4.8, c = 5$

53. $a = 13, b = 84, c = 95$

11.5 Find the distance between the two points.

54. $(5, 10), (2, 6)$

55. $(2, 8), (7, -4)$

56. $(3, -3), (4, 1)$

57. $(6, 1.5), (2.5, -4)$

58. $\left(1, \frac{2}{5}\right), \left(\frac{1}{2}, -\frac{4}{5}\right)$

59. $\left(-\frac{3}{8}, 1\right), \left(\frac{5}{8}, \frac{1}{2}\right)$

11.5 Find the midpoint of the line segment with the given endpoints.

60. $(6, -2), (8, -6)$

61. $(0, -5), (-4, 8)$

62. $(0, -6), (0, 2)$

63. $(10, 0), (-8, 0)$

64. $(-5, -3), (-8, -7)$

65. $\left(5, -\frac{1}{2}\right), \left(8, -\frac{5}{2}\right)$