Chapter 9 Keys to HW (answers that aren't in back of book)

9.1A p. 485-486

46. $\frac{4\sqrt{3}}{3}$ **48.** $\frac{\sqrt{13}}{13}$

9.1B p. 487-488

92. **a.** irrational; Six is not a perfect square.
b. rational; Four is a rational number.
c. irrational; Twelve is not a perfect square.
d. irrational; Three and seven are not perfect squares
e. irrational; Two and ten are not perfect squares.

112. $x = 5$

9.2 p. 494-494

14. $x = 2$ **16.** $x = 7, x = -1$ **18.** no solution

28. **a.** no; One of the t-intercepts is negative.
b. 2 sec

54. **a.** 29 ft, 21 ft
b. about 0.5 sec, about 2.3 sec
c. about 0.3 sec, about 2.2 sec

56. about 6.2 m

66. exponential decay function; As x increases by 1, y is multiplied by $\frac{1}{6}$.

9.3 p. 501-502

36. **a.** $r = \sqrt{\frac{A}{\pi}}$
b. about 6 ft; about 24 in., about 13 m
c. The steps for solving only need to be completed once.

38. **a.** a and c have opposite signs.
b. a is not 0, and c is 0.
c. a and c have the same sign.

44. **a.** $x = 14, x = -2$
b. $x = -3, x = -11$

R1 p. 504

1. $4x\sqrt{7x}$

2. $\frac{\sqrt{2}}{3}$

3. $-5\sqrt[3]{5}$

4. $\frac{3\sqrt{2}}{2}$

5. $\frac{4\sqrt{11}}{11}$

6. $\frac{12\sqrt{13}}{13}$

7. $\frac{3x\sqrt[3]{2x}}{7y^2}$

8. $\frac{x\sqrt{7z}}{7y^2z^3}$

10. $-4\sqrt{5} + 7\sqrt{10}$

12. $30\sqrt{2}$

13. $x = -1, x = 3$

17. $x = 8, x = -1$

19. $x = 4, x = -4$

21. $x = 9, x = 7$

23. length: about 17.4 m, width: about 4.4 m

24. **a.** 0.5 sec, 1 sec
b. about 1.65 sec

9.4A p.511-514

48. No, the x-intercept is negative.

50. yes; The graph has one positive x-intercept and one negative x-intercept, and it opens down.

78. $2\sqrt{3}$ **80.** $2\sqrt{5}$

9.4B p. 512-513

38. $y = -(x - 4)^2 + 4$; A **40.** $y = (x - 1)^2 + 3$; C

52. r, n; The graph has one positive x-intercept and one negative x-intercept, and it opens down.

54. **a.** 32 ft

b. $x = 1$; On the left side of $x = 1$, the height increases as time increases. On the right side of $x = 1$, the height decreases as time increases.

9.5A p. 521-522

58. **a.** *Sample answer:* 1

b. 16

c. *Sample answer:* 17

64. on the x-axis; The discriminant is zero.

66. below the x-axis; The discriminant is negative and $a < 0$.

9.5B p.521-524

56. rational; When the discriminant is a perfect square, the square root of the discriminant is an integer.

62. after about 2.2 h, after about 4.6 h

72. **a.** $h = -16t^2 + 45t + 2.5$

b. about 2.74 sec

74. **a.** C; The graph has two x-intercepts.

b. A; The graph has one x-intercept.

c. B; The graph has no x-intercepts.

9.6

4. no solutions **6.** C; (-2, 5), (1, 2) **8.** no solutions **14.** (-1, -3)

20. no solutions **56. a.** two solutions **b.** no solutions

R2 p.537

1. $x = 11, x = -11$; *Sample answer:* The equation can be written in the form $x^2 = d$, so solve using square roots.

2. $x \approx 7.36, x \approx -1.36$; *Sample answer:* $a = 1$ and b is even, so solve by completing the square.

3. $x \approx -1.27, x \approx 2.77$; *Sample answer:* The equation is not factorable and $a \neq 1$, so solve using the quadratic formula.

4. $x = 4, x = 3$; *Sample answer:* The equation is easily factorable, so solve by factoring.

5. $x = \frac{4}{5}, x = -1$; *Sample answer:* The equation is not easily factorable and $a \neq 1$, so solve using the quadratic formula.

6. $x = \frac{1}{4}, x = -\frac{7}{4}$; *Sample answer:* The equation is in the form $x^2 = d$ where x is a binomial, so solve using square roots.

7. The equation can be put in vertex form $y = 2(x + 1)^2 - 8$. The vertex, $(-1, -8)$ is in the third quadrant, so the function cannot be represented by the graph shown.

12. 55 points

13. about 3.16 sec

14. $36x^3\sqrt{10x}$ in.^{2}

15. Use the discriminant to determine the number of solutions.

16. **a.** *Sample answer:* $a = 3, b = 2, c = -1$

b. *Sample answer:* $a = 3, b = 6, c = 3$

c. *Sample answer:* $a = 2, b = 3, c = 4$