

Taken from § 8.3 in the text.

In exercises 21 and 23, a graph of $f(x) = ax^2 + bx + c$ is given in the text. Use this graph to solve $ax^2 + bx + c = 0$, if possible.

21.

23.

In exercises 25 and 27, a table of $f(x) = ax^2 + bx + c$ is given in the text. Use this table to solve $ax^2 + bx + c = 0$

25.

27.

In exercises 29 - 29 odd, solve the quadratic equation by graphing.

29. $x^2 - 4x - 5 = 0$

31. $x^2 + 2x = 3$

33. $x^2 = 9$

35. $4x^2 - 4x - 3 = 0$

37. $x^2 + 2x = -1$

39. $x^2 + 2 = 0$

In exercises 41 - 49 odd, solve by factoring.

$$41. x^2 + 2x - 35 = 0$$

$$43. 6x^2 - x - 1 = 0$$

$$45. 2x^2 + x + 3 = 6x$$

$$47. 25x^2 - 350 = 125x$$

$$49. 2(5x^2 + 9) = 27x$$

In exercises 51 - 61 odd, use the square root property to solve.

$$51. x^2 = 144$$

$$53. 5x^2 - 64 = 0$$

$$55. (x + 1)^2 = 25$$

$$57. (x - 1)^2 = 64$$

$$59. (2x - 1)^2 = 5$$

$$61. 10(x - 5)^2 = 50$$

In exercises 71 - 85 odd, solve by completing the square.

$$71. x^2 - 2x = 24$$

$$73. x^2 + 6x - 2 = 0$$

$$75. x^2 - 3x = 5$$

$$77. x^2 - 5x + 1 = 0$$

$$79. x^2 - 4 = 2x$$

$$81. 2x^2 - 3x = 4$$

$$83. 4x^2 - 8x - 7 = 0$$

$$85. 36x^2 + 18x + 1 = 0$$

In exercises 87 - 95 odd, solve using the method of your choice.

$$87. 3x^2 + 12x = 36$$

$$89. x^2 + 4x = -2$$

$$91. 3x^2 - 4 = 2$$

$$93. -6x^2 + 70 = 16x$$

$$95. -3x(x - 8) = 6$$

In exercises 105 - 111 odd, solve for the specified variable.

105. $x = y^2 - 1$ for y .

107. $K = \frac{1}{2}mv^2$ for v .

109. $E = \frac{k}{r^2}$ for r .

111. $LC = \frac{1}{(2\pi f)^2}$ for f .

113. Find a safe speed limit x for an airport taxiway curve with the given radius R by using $R = \frac{1}{2}x^2$.

a) $R = 450$ feet.

b) $R = 800$ feet.

115. How long does it take for a toy to hit the ground if it is dropped out of a window 60 feet above the ground? Does it take twice as long as it takes to fall from a window 30 feet above the ground? Use the fact that the height of a dropped object can be modeled by the function

$$h(t) = -16t^2 + h_0$$

where t is time in seconds, $h(t)$ is the height in feet and h_0 is the height the object is dropped from.

121. A rectangular plot of land has an area of 520 square feet and is 6 feet longer than it is wide.

a) Write a quadratic equation in the form $ax^2 + bx + c = 0$ whose solution gives the width of the plot of land.

b) Solve the equation and state a conclusion.