

Concept and Vocabulary Check:

1. The solutions of a quadratic equation in standard form $ax^2 + bx + c = 0$, $a \neq 0$, are given by the quadratic formula $x =$ _____
7. The most efficient technique for solving $(x + 3)^2 = 7$ is by using _____.
8. The most efficient technique for solving $x^2 - 2x - 3 = 0$ is by using _____.
9. The most efficient technique for solving $x^2 - 5x - 10 = 0$ is by using _____.

Practice Exercises:

In exercises 1 - 21 odd, solve each equation using the quadratic formula. Simplify irrational solutions when possible. Describe the solutions using set notation.

1. $x^2 + 5x + 6 = 0$

5. $x^2 + 4x - 6 = 0$

$$7. x^2 + 4x - 7 = 0$$

$$17. 6x^2 + 6x + 1 = 0$$

$$11. 6x^2 - 5x - 6 = 0$$

$$21. 4x^2 = 2x + 7$$

In exercises 23 - 51 odd, solve each equation by the method of your choice. Simplify irrational solutions when possible. Describe the solutions using set notation.

$$23. 2x^2 - x = 1$$

$$27. 3x^2 = 60$$

$$33. (3x - 4)^2 = 16$$

$$43. (3x - 2)^2 = 10$$

$$35. 3x^2 - 12x + 12 = 0$$

$$45. \frac{x^2}{x+7} - \frac{3}{x+7} = 0$$

$$39. x^2 + 9x = 0$$

$$49. 2x^2 - 9x - 3 = 9 - 9x$$

Applications:

53. A football is kicked straight up from a height of 4 feet with an initial speed of 60 feet per second. The formula

$$h = -16t^2 + 60t + 4$$

describes the ball's height above the ground, h , in feet, t seconds after it is kicked. How long will it take for the football to hit the ground? Use a calculator and round to the nearest tenth of a second.

59. The length of a rectangle is 3 meters longer than the width. If the area is 36 square meters, find the rectangle's dimensions. Round to the nearest tenth of a meter.

61. The hypotenuse of a right triangle is 4 feet long. One leg is 1 foot longer than the other. Find the lengths of the legs. Round your answer to the nearest tenth of a foot.