

## Section 5.R.6 The Quadratic Formula

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### The Quadratic Formula

The Quadratic Formula

For the general quadratic equation \_\_\_\_\_

\_\_\_\_\_

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#### ▣ Example 1 The Quadratic Formula

Solve by using the quadratic formula.

$$x^2 - 5x + 3 = 0$$

**Solution**

### Exercises

Solve each of the quadratic equations using the quadratic formula.

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

6.  $x^2 - 2x + 3 = 0$

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

7.  $2x^2 + 5x - 3 = 0$

3.  $9x^2 + 12x + 4 = 0$

8.  $3x^2 - 7x + 4 = 0$

4.  $4x^2 - 20x + 25 = 0$

9.  $4x^2 + 6x + 1 = 0$

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

10.  $2x^2 - 3x - 1 = 0$

# The Discriminant

The expression  $b^2 - 4ac$ , the part of the quadratic formula that lies under the radical sign, is called the \_\_\_\_\_.

Discriminant	Nature of Solutions
$b^2 - 4ac > 0$	_____
$b^2 - 4ac = 0$	_____
$b^2 - 4ac < 0$	_____

## ▣ Example 5 Finding the Discriminant

Find the discriminant and determine the nature of the solutions to each of the following quadratic equations.

a.  $3x^2 + 11x - 7 = 0$

b.  $x^2 + 6x + 9 = 0$

c.  $x^2 + 1 = 0$

**Solution**

## Exercises

Find the discriminant and determine the nature of the solutions of each quadratic equation.

11.  $x^2 + 6x - 8 = 0$

14.  $x^2 + 3x + 5 = 0$

17.  $5x^2 + 8x + 3 = 0$

12.  $x^2 + 3x + 1 = 0$

15.  $4x^2 + 2x + 3 = 0$

18.  $4x^2 + 12x + 9 = 0$

13.  $x^2 - 8x + 16 = 0$

16.  $3x^2 - x + 2 = 0$