Section 9.1 Solving Quadratic Equations by Completing the Square

# Objective 1: Using the Square Root Property

In this section, we will revisit how to use square roots to solve quadratic equations. The difference is we will now use the imaginary unit to express the solutions when they are not real numbers. For example, previously we would say that the equation has no real solutions, which is true, but we can now express those solutions in terms of .

The solutions to the equation are and .

Solutions to a quadratic equation are complex numbers which may be real numbers, pure imaginary numbers, or of the form where and .

Use the square root property to solve the equation. Give the answers in exact form using simplified radicals and as needed.

|  |  |
| --- | --- |
| a. | b. |

|  |  |
| --- | --- |
| c. | d. |

# Objective 2: Solving by Completing the Square

In order to use the square root property to solve a quadratic equation of the form where , we must first rewrite the equation as a binomial squared set equal to a constant. This means that we need one side of the equation to be a perfect square trinomial. The process of rewriting the equation so that one side is a perfect square trinomial is called **completing the square**.

Solve by completing the square. Give the answers in exact form using simplified radicals and as needed.

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| --- | --- |
| a. | b. |

|  |  |
| --- | --- |
| c. | d. |