Section 10.2

Solving Quadratic Equations by Completing the Square

# Objective 1: Solving by Completing the Square

In the last section, we used the square root property to solve quadratic equations such as . Notice that one side of the equation is a quantity squared and the other side is a constant.

Consider the equation . In order to solve this equation by using the square root property, we need the left side of the equation to be a perfect square trinomial, meaning it can be written as a binomial squared. We can do this by adding to both sides of the equation.

The process of rewriting the equation so that one side is a perfect square trinomial is called **completing the square**. By completing the square, a quadratic equation can be solved by using the square root property.

or

or

These two solutions can also be expressed using the symbol . The solutions to the equation are .

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

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

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