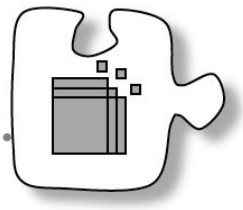
5.2.3 How can I generalize?



More Completing the Square

Directions: Solve the following quadratic equations by writing them in **perfect square form**.

1. $x^2 + 8x + 9 = 0$

2. $x^2 - 12x - 2 = 8$

3. $x^2 + 40x + 11 = 20$

4. $x^2 + 9x - 10 = 0$

5. $x^2 - 7x = -10$

6. $x^2 + \frac{1}{3}x - 1 = 0$

7. Solution(s) that are **irrational** are decimals that never repeat and never end. Which quadratic equations from questions 1 through 6 have irrational solutions? Write the solution(s) in **approximate decimal form**. Round your answers to the nearest hundredth.

8. If the solution(s) are **rational,** they can be written as a whole number, integer, fraction, or as a decimal that ends or repeats. Which quadratic equations from questions 1 through 6 have rational solutions?

9. The quadratic equations with rational solutions can also be solved by factoring.
For example,

Solve $x^2 + 2x + 25 = 11x + 5$

$x^2 + 2x + 25 = 11x + 5$
$-11x \quad -5 \quad -11x \quad -5$
$x^2 - 9x + 20 = 0$

First, set the equation equal to 0 (move everything to one side).

$(x - 5)(x - 4) = 0$

Next, factor the quadratic.

$x - 5 = 0$ or $x - 4 = 0$
$+5 \quad +5 \qquad +4 \quad +4$
$x = 5$ or $x = 4$

Use the Zero Product Property to split into two equations and solve each one separately.

Choose 1 equation that can be solved by factoring from #1-6 and solve it using the Zero Product Property.