CHAPTER 12: QUADRATIC EQUATIONS

10.5 Solving Quadratics by Completing the Square

OBJECTIVES

- I can solve a quadratic equation by completing the square

PART 1: PERFECT SQUARE TRINOMIALS

- Perfect Square trinomials can be factored in to $(a + b)^2$

Distribute $(x+4)^2$

Factor $x^2 + 12x = 36$

PART 1: PERFECT SQUARE TRINOMIALS

Find the value of *n* such that each expression is a perfect square trinomial.

1. $k^2 + 14k + n$ **2.** $m^2 - 8m + n$ **3.** $y^2 - 40y + n$

PART 2: SOLVING USING PERFECT SQUARES

Factor & solve $x^2 + 2x = 0$.

Fill a perfect square as well as you can to match the equation.

$x^2 + 2x = 0$

Complete the square by adding a constant to both sides of the equation.

$x^2 + 2x +$ _____ = _____

PART 2: SOLVING USING PERFECT SQUARES

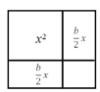
$x^2 + 2x +$ _____ = _____

Factor the new expression. It should be a perfect square.

Solve the equation by taking the square roots of both sides.

PART 2: SOLVING USING PERFECT SQUARE

- The procedure for completing the square:
- 1. Write the equation in the form $x^2 + bx = c$
- 2. Complete the square with (half of b) squared. Add this to both sides of the equation.
- 3. Factor the perfect square trinomial.
- 4. Take the square root of both sides. In this step, make sure you take both square roots on the right side.



$= c$

PART 2: COMPLETING THE SQUARE

2 Solve the equation $m^2 - 6m = 247$.

PART 2: COMPLETING THE SQUARE

Solve the equation $x^2 + 9x = 136$.

PART 2: COMPLETING THE SQUARE

4 Solve each equation. Round to the nearest hundredth.

a. $4a^2 - 8a = 24$ **b.** $5n^2 - 3n - 15 = 10$

CAN YOU?? PROVE IT!!

- I can solve a quadratic equation by completing the square

23. $3q^2 - 12q = 15$