

## Solving Quadratic Equations by Factoring 5.2

### 5.2. Solving Quadratic Equations by Factoring

- Warm-up
- Rewrite the following function in standard form

$$y = (x + 3)(x + 5)$$

### Notes

- $(x + 3)(x + 5)$  can be rewritten as  $x^2 + 8x + 15$ .
- The expressions  $(x + 3)$  and  $(x + 5)$  are known as **binomials** because they have two terms.
- $x^2 + 8x + 15$  is a **trinomial** because it has three terms.
- **Factoring** is the process used to write trinomials into binomials.

### What is factoring... Wait what is a factor?

- Notes

### Lets try this out

- $f(x) = x^2 + 6x + 5$       $f(x) = x^2 - x - 6$

### Practice

- $x^2 - x = 2$

- $x^2 + 2x = -1$

### Practice/Homework

7a.  $x^2 - 11x + 24 = 0$

8a.  $x^2 + 5x + 13 = 8$

7b.  $x^2 - 10x + 22 = -2$

8b.  $x^2 + 3x + 12 = 6$

9a.  $4x^2 - 16x + 18 = 6$

10a.  $5x^2 - 14x = 3$

### Factoring Continued 2/11

- Warm-Up
- Factor the following Expressions
  - $x^2 + 3x + 2$
  - $3x^2 + 2x - 5$
  - $x^2 - 7x + 12$

### Special Cases

- Difference of two squares

- $a^2 - b^2 = (a + b)(a - b)$

- $x^2 - 9 = (x + 3)(x - 3)$

Example; Factor,

$$x^2 - 16,$$

$$x^2 - 4$$

You try!

- $x^2 - 36$

- $x^2 - 81$

- $x^2 + 49$

### Special Case Number 2

- $2x^2 + 4x - 6$

- $2x^2 - 6x - 8$

You try

- $3x^2 - 21x + 18$

- $4x^2 + 6x - 18$

## 5.2 Solving Quadratic equations by factoring 2/12

- Warm Up
  - Factor the following trinomials
    - $3x^2 - 6x - 9$
    - $x^2 - 144$

## Why are we here?

- What do these factored forms mean?

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

## Solving

- $x^2 - 3x - 4 = 0$
- $x^2 - 2x + 1 = 0$
- $x^2 + 6x + 5 = 0$