6.6 Factoring Trinomials

SWBAT factor quadratic trinomials.

Assignments:

HW48

Vocabulary

- Coefficient
  - A number being multiplied to a variable
- Quadratic
  - A polynomial with degree 2
- Trinomial
  - A polynomial with 3 terms
- Standard Form
  - All the terms of the polynomial are in order from the biggest exponent to the smallest
- Leading Coefficient
  - The coefficient of the term with the biggest exponent. In standard form, this is the first term.

Standard Form of a Quadratic:

$$Ax^2 + Bx + C$$

Factoring Quadratic Trinomials

- Goal: Make the trinomial into a polynomial with 4 terms.
  - Then we can factor by grouping
  - We have to be careful how we make it into a polynomial with 4 terms, or it won't factor.

1. Factor out the GCF.
2. Make sure the trinomial is in Standard Form. Identify A, B, and C
3. Multiply A and C. (Remember: A is the leading coefficient in front of the first x^2 term, and C is the constant at the end).
4. List the factors of (AC) (from step 3).
5. Find the pair whose sum is B (the coefficient of the middle x term).
6. Rewrite the trinomial as a polynomial with 4 terms. The first and last terms will stay exactly the same. The middle term will become 2 terms whose coefficients are the factors from step 4.
7. Factor by grouping.

Factoring Quadratics

- Example 1: $7n^2 - 3n - 4$

- Example 2: $28p^2 + 4p - 24$

1. $3r^2 - 8r - 35$
2. $21b^2 - 144b - 21$
3. $12x^2 - 4x - 40$
4. $7a^2 - 27a + 18$
5. $5n^2 - 16n + 12$
6. $10n^2 - 44n + 16$

Factor completely.

- Example 4: $5k^2 + 19k - 30$

- Example 5: $n^2 + 9n - 10$

1. $4x^2 + 11x + 6$
2. $4x^2 - 20x + 21$
3. $18m^2 + 69m + 21$
4. $18n^2 + 21n - 15$
5. $m^2 - 3m - 40$
6. $x^2 + 3x - 54$
7. $x^2 + 5x + 4$
8. $4r^2 - 20r - 144$

Factor completely.

- Example: $28p^2 + 4p - 24$

- Example: $2a^2 + 21a + 20$

- Example: $n^2 + 9n - 10$

1. $4x^2 + 11x + 6$
2. $4x^2 - 20x + 21$
3. $18m^2 + 69m + 21$
4. $18n^2 + 21n - 15$
5. $m^2 - 3m - 40$
6. $x^2 + 3x - 54$
7. $x^2 + 5x + 4$
8. $4r^2 - 20r - 144$