Chapter 1.2.8 - 1.2.9: Factoring Special Products and General Strategy for Factoring Polynomials

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Factoring Differences of Squares

Recall, we learned a special rule about the product of conjugates $(a+b)(a-b)$.

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

We called this the **Product of Conjugates**. The reverse of this rule will help us to factor binomial in which two squares are being subtracted.

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

We call this the **Difference of Perfect Squares**.

Factoring Differences of Squares

Examples:Factor.

- $121x^2 - 25y^2$
- $x^6 - 9$
- $-49a^4b^8 + 16a^2b^4$
- On Your Own: $81u^2 - 36v^2$

General Strategy for Factoring Polynomials

Let's summarize a general strategy for factoring polynomials.

General Strategy for Factoring Polynomials

GCF

Binomial

- **Difference of Squares**

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

- **Sum of Squares**

Sums of squares do not factor.

Trinomial

- $x^2 + bx + c$

$(x \quad)(x \quad)$

- $ax^2 + bx + c$
  - **'a' and 'c' squares**

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

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

  - **'ac' method**

More than 3 terms

- grouping

Factoring Practice

Factor completely.

- $7xy^5 - 7xy$
- $4x^2 + 8bx - 4ax - 8ab$
- $40x^2y + 44xy - 24y$
- $8x^4 - 32x^3 - 40x^2$
- $u^8 + 2u^4 + 1$