Sec 3.8: Factoring Special Polynomials

(1) Perfect Square Trinomials
(2) Difference of Squares

Perfect Square Trinomials

Example 1: Multiply

a) $(x+1)^2$

b) $(x-3)^2$

c) $(2x+3)^2$

d) $(4x-5)^2$

What patterns do you see in the trinomials and their factors?

Summary: **Perfect Square Trinomials.**

factored form → perfect square trinomial

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

or

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

Example 2: Factor the perfect square trinomials.

a) $x^2 + 10x + 25$

b) $a^2 - 12a + 36$

c) $4x^2 + 20x + 25$

d) $9x^2 - 12x + 4$

e) $x^4 - 4x^2 + 4$

Example 3: Which of the following trinomials are perfect square trinomials? Justify your answer.

a) $25x^2 + 20x + 4$

b) $4x^2 + 6x + 9$

c) $36x^2 + 12x + 1$

Work Book Questions	Extra Practice Questions
p.194 #4c, 8abf (factor only), 15a, 20a	p.194 #4ab, 8cde,7a, 12

Difference of Squares

Example 4: Multiply

a) $(x+1)(x-1)$

b) $(x+2)(x-2)$

c) $(2x+1)(2x-1)$

d) $(3x-2y)(3x+2y)$

Questions: What pattern do you see in the product?
What pattern do you see in the original factors?

Summary: $(a+b)$ and $(a-b)$ are called conjugates.

The product you get when you multiply conjugates is called a **difference of squares**.

multiply conjugates → $(a+b)(a-b)$ = difference of squares → $a^2 - b^2$

Why do you think it's called a difference of squares???

Example 5: Factor these difference of squares.
Hint....use the idea of conjugates!

a) $x^2 - 25$

b) $x^2 - 81$

c) $4x^2 - 49$

d) $4x^2 - 64$

e) $16 - y^2$

f) $81x^2 - 121y^2$

Work Book Questions	Extra Practice Questions
p.194-195 # 4ef, 6ac, 10ac, 18	p.194-195 #6bd, 10bdfh