

3.8

Factoring Special Polynomials**Lesson 11**

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Connect**Special Trinomials**

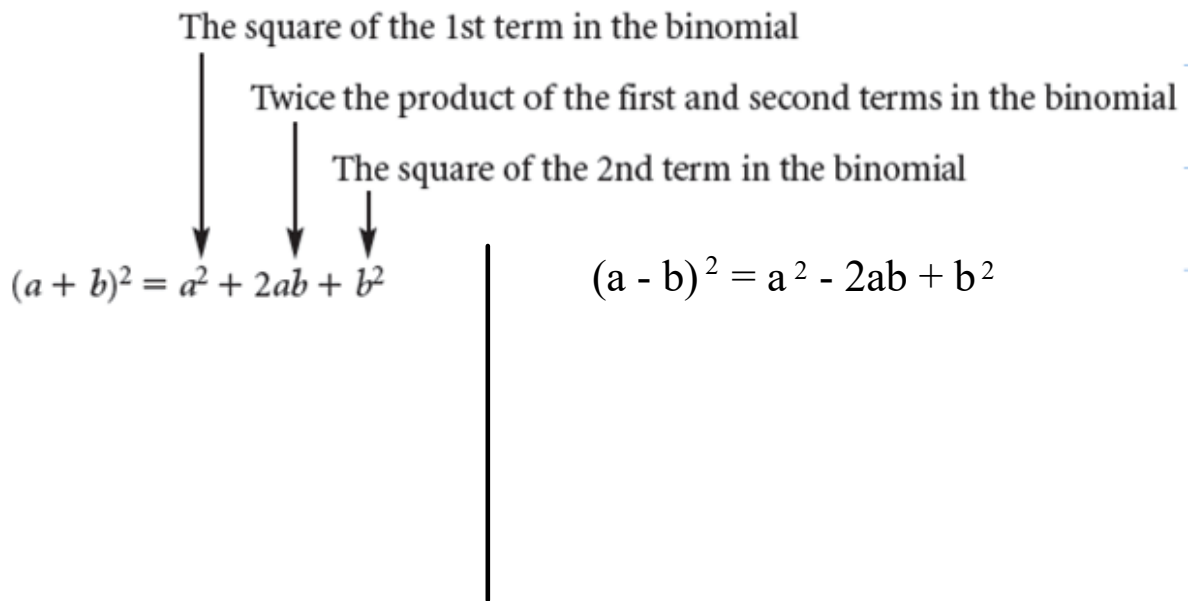
There are 3 different types of special trinomials

- 1) Perfect square trinomials
- 2) Trinomials with 2 variables
- 3) Difference of squares

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Connect

Perfect Square



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Connect

Factoring Perfect Squares

Factor $4x^2 + 12x + 9$

$$\overbrace{4x^2 + 12x + 9}^{36}$$

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

Steps:

- Check for Common Factors
- Check 1st term to be Perfect Square
- Check 3rd term to be Perfect Square
- The 2nd term is twice the product of the square root of a and b coefficients
- Watch the signs

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Connect

Factoring Perfect Squares

Factor $4 - 20x + 25x^2$

$$4 - 20x + 25x^2$$

$$25x^2 - 20x + 4$$

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

Steps:

Check for Common Factors

Check 1st term to be Perfect Square

Check 3rd term to be Perfect Square

The 2nd term is twice the product of the square root of a and b coefficients

Watch the signs

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Practice

YOU TRY!

Factor each of the following

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

$$(6x + 1)^2$$

$$16 - 56x + 49x^2$$

$$49x^2 - 56x + 16$$

$$(7x - 4)^2$$

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Connect

Difference of Square Trinomials

Factor $25 - 36b^2$

$$25 - 36b^2$$

$$(5 + 6b)(5 - 6b)$$

Steps:

Write each term as a perfect square

Write these terms in Binomial form $(a - b)(a + b)$

Check to see if any of the remaining factors are also perfect squares - if so - repeat the process.

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Connect

Difference of Square Trinomials

Factor $16x^2 - 9$

$$16x^2 - 9$$

$$(4x - 3)(4x + 3)$$

Steps:

Write each term as a perfect square

Write these terms in Binomial form $(a - b)(a + b)$

Check to see if any of the remaining factors are also perfect squares - if so - repeat the process.

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Connect

Difference of Square Trinomials

Factor $5x^4 - 80y^4$

$$x \cdot x = x^2$$

$$x^2 \cdot x^2 = x^4$$

$$5x^4 - 80y^4$$

$$5(x^4 - 16y^4)$$

$$5(x^2 - 4y^2)(x^2 + 4y^2)$$

$$5(x - 2y)(x + 2y)(x^2 + 4y^2)$$

Steps:

Write each term as a perfect square

Write these terms in Binomial form $(a - b)(a + b)$

Check to see if any of the remaining factors are also perfect squares - if so - repeat the process.

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Practice

YOU TRY!

Factor each of the following

$81m^2 - 49$

$(9m - 7)(9m + 7)$

$16v^4 - 2w^4$

$2(8v^4 - w^4)$

$32v^4 - 2w^4$

$2(16v^4 - w^4)$

$2(4v^2 - w^2)(4v^2 + w^2)$

$2(2v - w)(2v + w)(4v^2 + w^2)$

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Connect

Factoring 2 Variable Trinomials

Factor $2a^2 - 7ab + 3b^2$

$2a^2 - 7ab + 3b^2$

Steps:

Check for Common Factors

Use Method of Decomposition

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Connect

Factoring 2 Variable Trinomials

Factor $10c^2 - cd + 2d^2$

$$\overbrace{10c^2 - cd + 2d^2}^{20}$$

Can not factor.

$$10c^2 - 9cd + 2d^2$$

$$\underline{10c^2 - 5cd} \quad \underline{-4cd + 2d^2}$$

$$5c(2c-d) - 2d(2c-d)$$

$$(5c-2d)(2c-d)$$

Steps:

Check for Common Factors

Use Method of Decomposition

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Practice

YOU TRY!

Factor each of the following

$$\overbrace{5x^2 - 13xy + 6y^2}^{30}$$

$$5x^2 - 10xy - 3xy + 6y^2$$

$$5x(x - 2y) - 3y(x - 2y)$$

$$(5x - 3y)(x - 2y)$$

$$\overbrace{3p^2 - 5pq - 2q^2}^{6}$$

$$3p^2 + p(-6q) - 2q^2$$

$$p(3p - 2q) - 2q(3p - 2q)$$

$$(p - 2q)(3p - 2q)$$

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Practice

HOMEWORK!

Textbook Questions:

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