6.3 Perfect Square Trinomials DAY TWO

OBJECTIVE 3: Factoring Perfect Square Trinomials

A trinomial that is the square of a binomial is called a perfect square trinomial.

$$(x + 3)^2 = (x + 3)(x + 3) = x^2 + 6x + 9$$

We were reminded of this in chapter 5 with special product formulas.

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Factoring Perfect Square Trinomials a^2 + 2ab + b^2 = (a + b)^2 a^2 - 2ab + b^2 = (a - b)^2 Helpful Hint Notice that for both given forms of a perfect square trinomial, the last term is positive. This is because the last term is a square.
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To use these we need to be able to recognize when we can. So, a trinomial is a perfect square when...

- 1) two terms, a² and b², are squared
- 2) the remaining term is (2)(a)(b) or (-2)(a)(b).

Example 8: Factor
$$x^2 + 12x + 36$$

 $a^2 = x^2$ $b^2 = 36$

Practice 8: $x^2 + 14x + 49$

$$a = x^{2} \qquad b^{2} = 49$$

$$0 = x \qquad b = 7 \qquad (x+7)^{2}$$

$$(x+7)^{2} \qquad (x+7)^{2} \qquad (x+7)^{2}$$

$$(x+7)^{2} \qquad (x+7)^{2} \qquad (x+7)^{2}$$

Example 9: Factor
$$25x^{2} + 25xy + 4y^{2}$$

$$a^{2} = 25x^{2} + b^{2} = 4y^{2}$$

$$a = 5x + b^{2} = 2y$$

$$(5x + 2y)^{2}$$

Practice 9:
$$4x^{2} + 20xy + 9y^{2}$$

$$\alpha^{2} = 4x^{2} \qquad b^{2} = 9y^{2}$$

$$\alpha = 2x \qquad + b = 3y$$

$$(a+b)^{2}$$

$$(2x+3y)^{2}$$

Example 10: Factor
$$4m^4 - 4m^2 + 1$$

 $(2m^2-1)(2m^2-1)$ $\alpha^2 = 4m^4$ $b^2 = 1$
 $4m^2 - 2m^2 - 2m^2 + 1$ $\alpha = 2m^2$ $b = 1$
 $(4m^2 - 4m^2 + 1)$ $(a - b)^2$
 $(2m^2 - 1)^2$

Practice 10:
$$36n^4 - 12n^2 + 1$$

 $(6n^2 - 1)(6n^2 - 1)$
 $36n^4 - 6n^2 - 6n^2 + 1$
 $36n^4 - 12n + 1$
 $(6n^2 - 1)^2$
 $(6n^2 - 1)^2$

Example 11: Factor
$$162x^3 - 144x^2 + 32x$$

$$2x(9x-4)^2 2x(81x^2-72x+16)$$

$$2x(9x-4)(9x-4) = 81x^2 - 6 = 16$$

$$2x(81x^2-36x+16) = 4$$

$$2x(81x^2-72x+16) = 4$$

$$2x(81x^2-72x+16) = 4$$

$$2x(81x^2-72x+16) = 4$$

$$2x(81x^2-72x+16) = 4$$

$$2x(9x-4)^2 = 4$$

$$2x(81x^2-36x+16) = 4$$

$$2x(9x-4)^2 = 4$$

$$3x(2x-7)^2 = 3x(4x^2-28x+49)$$

$$3x(2x-7)^2 = 4$$

$$3x(4x^2-28x+49) = 4$$

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Vocabulary, Readiness & Video Check

Use the choices below to fill in each blank. Some choices will be used more than once and some not used at all.

5y^2 \qquad (x+5y)^2 \qquad \text{perfect square trinomial} \\ (5y)^2 \qquad (x-5y)^2 \qquad \text{perfect square binomial}
1. A perfect square trinomial is a trinomial that is the square of a binomial.

2. The term 25y^2 written as a square is (5y)^2
3. The expression x^2 + 10xy + 25y^2 is called a perfect square trinomial .

4. The factorization (x+5y)(x+5y) may also be written as (x+5y)^2.

Complete each factorization.

5. 2x^2 + 5x + 3 factors as (2x+3)(?). d
a. (x+3) b. (2x+1) c. (3x+4) d. (x+1)

6. 7x^2 + 9x + 2 factors as (7x+2)(?). b
a. (3x+1) b. (x+1) c. (x+2) d. (7x+1)
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6.3 DAY TWO HW Assignment 96. y - 9

pg. 401: 39 - 93 (eoo), 95 - 102 102. Twitter 102. on possible answer: rounding error