ST. JEAN DE BREBEUF MATHEMATICS

CHAPTER 7.3

FACTOR A DIFFERENCE OF SQUARES

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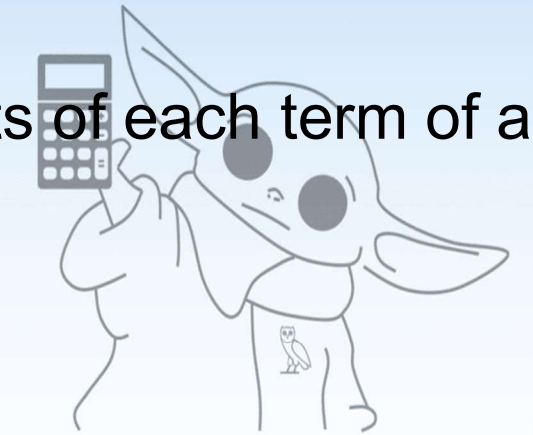
KEY CONCEPTS

Two terms

A **difference of squares** is a binomial with **square terms** as the first and second terms, **separated by a subtraction sign**.

EXAMPLE: $\mathbf{x^2 - 25}$

The factors of a difference of squares are **two binomials**.
→In one binomial factor the square roots of each term of a difference of squares are added,
→in the other binomial factor the square roots of each term of a difference of squares are subtracted.



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CHAPTER 7.3 FACTOR A DIFFERENCE OF SQUARES

EXAMPLE 1 *Factoring Differences of Squares*

(a) $x^2 - 16$

$= (x + 4)(x - 4)$

$\sqrt{x^2} =$ x

$\sqrt{16} =$ 4

Check:

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

$= x^2 - 4x + 4x - 16$

$= x^2 - 16$

(b) $100 - x^2$

$= (10 + x)(10 - x)$

$\sqrt{100} =$ 10

$\sqrt{x^2} =$ x

Check:

$(10+x)(10-x)$

$= 100 - 10x + 10x - x^2$

$= 100 - x^2$

FACTORING DIFFERENCES OF SQUARES

1. Write down two sets of brackets

2. Place a "+" in the first bracket and " – " in the second bracket.

3. Take the **square root** of the *first* term. Place this answer in the first term of each bracket.

4. Take the **square root** of the *second* term. Place this answer in the second term of each bracket.

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EXAMPLE 1 *Factoring Differences of Squares*

* (c) $9x^2 - 25$

$= (3x + 5)(3x - 5)$

$\sqrt{9x^2} = 3x$

$\sqrt{25} = 5$

Check:

$(3x+5)(3x-5)$

$= 9x^2 - 15x + 15x - 25$

$= 9x^2 - 25$

FACTORING DIFFERENCES OF SQUARES

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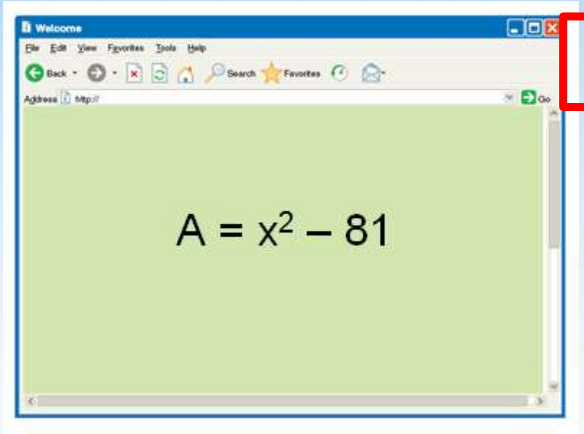
EXAMPLE 2 *Application: Area*

A screen capture of a webpage is measured by its area.

(a) Factor the expression for area to find the expressions for the dimensions of the webpage.



$A = (x + 9)(x - 9)$

$\sqrt{x^2} = x$

$\sqrt{81} = 9$

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EXAMPLE 2 *Application: Area*

A screen capture of a webpage is measured by its area.

(b) Using the expressions from (a), calculate the area when **x = 20 cm**

$$A = (x + 9)(x - 9)$$

$$A = (20 + 9)(20 - 9)$$
$$= (29)(11)$$
$$= \mathbf{319\ cm^2}$$

The area of the webpage is **319 square centimetres**

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