Essential Questions   3/4/2021

- ## How can I factor special products?
- ## How can I solve quadratic equations?

Learning Targets

Factor Special Products
Solve Quadratic Equations

Factor Special Products

Review: Factor the following expressions:

Standard(s): MGSE9-12.A.SSE.2
Use the structure of an expression to rewrite it in different equivalent forms. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

Review: Factor the following expressions:
a. $x^2 - 49$ b. $x^2 - 25$ c. $x^2 - 81$

$(x+7)(x-7)$ $(x+5)(x-5)$ $(x+9)(x-9)$

1. What do you notice about the "a" term? x^2

2. What do you notice about the "c" term? perfect squares

3. What do you notice about the "b" term? $b = 0$

4. What do you notice about the factored form? $(a+b)(a-b)$

The above polynomials are a special pattern type of polynomials; this pattern is called a

Video

Difference of Two Squares
$a^2 - b^2 = (a - b)(a + b)$
Always subtraction
Both terms are perfect squares
Always two terms

Can you apply the "Difference of Two Squares" to the following polynomials?

I do $(a+b)(a-b)$

a. $9x^2 - 49$	b. $9x^2 - 100$
$a = 3x$	$a = 3x$
$b = 7$	$b = 10$
$= (3x+7)(3x-7)$	$(3x+10)(3x-10)$

We do

c. $4x^2 - 25 = (2x+5)(2x-5)$

$a = 2x$

$b = 5$

Practice Factoring Difference of Two Squares - You do

d. $16x^2 - 1 = (4x+1)(4x-1)$

$a = 4x$

$b = 1$

e. $x^2 - 25$

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

f. $25x^2 - 64$

$a = 5x$

$b = 8$

$(5x+8)(5x-8)$

g. $36x^2 - 81$

h. $49x^2 - 9$

$9(4x^2 - 9)$

$a = 2x$

$b = 3$

$9(2x+3)(2x-3)$

$a = 7x$

$b = 3$

$(7x+3)(7x-3)$

Post-It Check!!!

$$\frac{4x^2 - 16}{4}$$

$$4\left(x^2 - 4\right)$$

$$a = x$$
$$b = 2$$

$$\boxed{4(x+2)(x-2)}$$

Post-It Check!!!

$$9x^2 - 100$$

$$a = 3x$$
$$b = 10$$

$$(3x + 10)(3x - 10)$$

Factoring Perfect Square Trinomials

Review: Factor the following expressions:

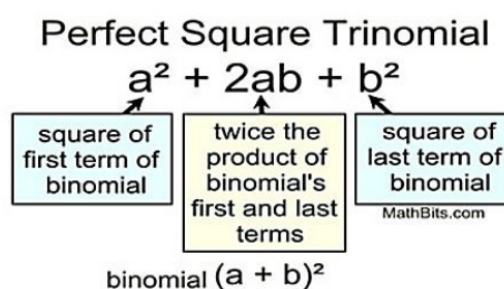a. $x^2 + 8x + 16$ b. $x^2 - 2x + 1$ c. $x^2 - 10x + 25$

(handwritten work: 16/4/4/8, $(x+4)^2$, $(x+4)(x+4)$)

(handwritten work: -1/-1/-2, $(x-1)^2$)

(handwritten work: 25/-5/-5/-10, $(x-5)^2$)

1. What do you notice about the "a" term? _____

2. What do you notice about the "c" term? __*perfect squares*__

3. What do you notice about the "b" term? __*2 times sqrt of c*__

4. What do you notice about the factored form? __*the same*__

The above polynomials are a second type of pattern; this pattern type is called a

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Perfect Square Trinomials
a² + 2ab + b² = (a + b)²
a² - 2ab + b² = (a - b)²
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Perfect Square Trinomial
$$a^2 + 2ab + b^2$$

square of first term of binomial	twice the product of binomial's first and last terms	square of last term of binomial

MathBits.com

binomial $(a + b)^2$

Practice

Using the perfect square trinomial pattern, see if you can fill in the blanks below:

a. $x^2 +$ __12__ $+ 36$

$$\sqrt{36} = 6 \times 2$$
$$= 12$$

b. $x^2 -$ __18__ $+ 81$

$$\sqrt{81} = 9 \cdot 2$$
$$18$$

c. $x^2 -$ __16__ $+ 64$

$$\sqrt{64} = 8 \times 2 =$$

d. $x^2 + 4x +$ __4__

$$2 = 2^2$$

e. $x^2 - 6x +$ __9__

$$2 = (-3)^2$$

f. $x^2 + 20x +$ __100__

$$2 = 10^2$$

Attachments

Functions notation.ppt

Functions Practice HW.docx

Functions notation notes.ppt

Factoring Quiz Review.ks-ia1