

Learning Target 2.3a

I can find the real zeros of a polynomial function by factoring.



Recap of factoring techniques

- 1.) GCF (always try first!)
- 2.) Difference of two squares (2 terms)
- 3.) Factoring trinomials (3 terms)
- 4.) Grouping (4 terms)

Remember, when finding zeros of a function by factoring, use the ZERO PRODUCT PROPERTY!

Difference of TWO SQUARES (D.O.T.S)

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

Pretty gross,
tbh

1.) Factor the following expression:

$$9x^2 - 36 \quad (3x+6)(3x-6)$$

$3x \cdot 3x$ $6 \cdot 6$

2.) Solve the following equation:

$$9x^2 - 36 = 0$$

$$(3x+6)(3x-6) = 0$$

$$3x+6=0$$

$$3x = -6$$

$$x = -2$$

$$3x-6=0$$

$$3x = 6$$

$$x = 2$$

Solving by Factoring a Trinomial ($ax^2 + bx + c$) when $a=1$

3.) Solve the equation: $x^2 + 5x + 6 = 0$

multiply

$$1x^2 + 5x + 6$$

multiply

$$1x^2 + 5x + 6$$

add

$$\begin{array}{c} 6 \\ 3 \times 2 \\ 5 \end{array}$$

$$(x+3)(x+2) = 0$$

Zero Product Property

$$x+3=0$$

$$x+2=0$$

$$x = -3, -2$$

Solving by Factoring a Trinomial ($ax^2 + bx + c$) when $a \neq 1$

4.) $2x^2 + 11x + 5 = 0$

mult. $\begin{matrix} & 10 & \\ 10 & \times & 1 \\ & 11 & \\ & + & \end{matrix}$

$(2x^2 + 10x) + (x + 5) = 0$

$2x(x+5) + 1(x+5) = 0$ Break into 4 terms then factor by grouping!

$(2x+1)(x+5) = 0$

$x = -\frac{1}{2}, -5$

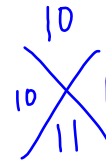
$(x+5)(2x+1) = 0$

	x	5
$2x$	$2x^2$	$10x$
1	$1x$	5

$2x^2 + 11x + 5 = 0$

$(\frac{2x}{2} + \frac{10}{2})(2x+1) = 0$

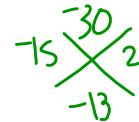
$(x+5)(2x+1) = 0$



5.) Solve the following by factoring:

$6x^4 - 20x^2 = 26x^3$

$-26x^3 \quad -26x^3$



$6x^4 - 26x^3 - 20x^2 = 0$

$2x^2(3x^2 - 13x - 10) = 0$

$2x^2(x-5)(3x+2) = 0$

$2x^2 = 0 \quad x-5 = 0 \quad 3x+2 = 0$

$\sqrt{x^2} = \sqrt{0}$

$x = 0$ mult. 2, 5, $-\frac{2}{3}$

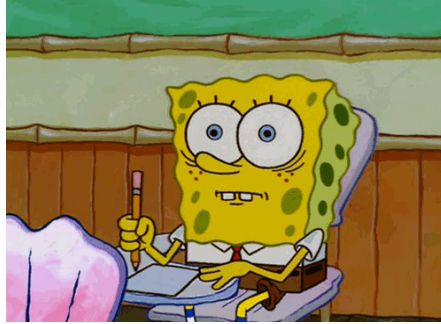
OR: $x = 0 \quad x = 5 \quad x = -\frac{2}{3}$

5.) $x^2 + 5x - 13 = 8x + 27$

$x = 8, -5$

Homework!!!

"Unit 2.3a - Solving by Factoring" worksheet



Attachments



Factoring Millionaire

BD18820_.wav