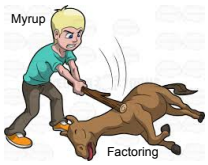
Factoring Review

Objectives: 7) I can factor quadratic expressions.



Let's finally kill the beast, shall we?

No horses were, are, or will be harmed during this class.

Aug 3-3:18 PM

Factoring: Finding what factors to multiply together to get an expression. It is like "splitting" an expression into the multiplication of factors.

Ex. Write the number 6 as a product of factors.

6 = (2)(3)

Ex. Factor the expression: x^2+3x+2

$x^2+3x+2=(x+2)(x+1)$

Aug 3-3:21 PM

GCF Factoring:

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

$xy(3x+6y^2-1)$

$2x^2+4x$

$2x(x+2)$

$2x(x-1)+5(x-1)$

$(x-1)(2x+5)$

Aug 3-3:37 PM

Factor by grouping

$4x-4y+ax-ay$

$4(x-y)+a(x-y)$

$(x-y)(4+a)$

$4(x-y)+a(x-y)$

$6z^2+2z+9z+3$

$2z(3z+1)+3(3z+1)$

$(3z+1)(2z+3)$

Aug 3-4:05 PM

Quadratic Factoring

ax^2+bx+c

What should the factors look like?

( )( )

How do you multiply two binomials?

$(a+b)(c+d)=$

Factoring is just this backwards!

Aug 3-3:39 PM

How to Factor a Quadratic Expression

Factoring quadratics in the form $ax^2 + bx + c$

1. Factor out the GCF
2. Multiply a and c
3. Find two factors of ac that add to b
   *If ac is negative, factor.s must have opposite signs
   *If ac is positive, factors must have same (+ or -) signs
4. Re-write equation with b split up into factors
5. Find the GCF by grouping
6. Factor the GCF of the whole

Aug 3-4:06 PM

Factor the given expressions.

x^2-2x-8

$(x-4)(x+2)$

3 -8

3 1 8

1 1 -1

6 + -4 = 2

-6 + 4 = -2

$3x^2+5x-8$

-24

-6 4

6 -4

-8 3

8 -3

$3x^2+8x-3x-8$

$x(3x+8)-1(3x+8)$

$(3x+8)(x-1)$

-24 + 1 = -23

-3 + 8 = 5 ✓

$(3x+8)(x-1)$

Aug 3-3:44 PM

Factor the given expressions.

$x^2+17x+70$

$(x+10)(x+7)$

$2x^2-x-15$

$2x^2-6x+5x-15$

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

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

-30

-6 5

Aug 3-3:51 PM

Difference of □s

What if...?!

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

$x^2 - 9$

$x^2 + 0x - 9$

$4x^2 - 49$

$(2x-7)(2x+7)$

$9x^2 - 81$ $9(x^2-9)$

$(3x-9)(3x+7)$

Notice a pattern?

$(x-1)(x+1)$

$x^2 - 1$

These are called a *difference of squares*.

Aug 3-3:54 PM

$x^2 + 6x + 9$

$(x+3)(x+3)$

$(x+3)^2$

This is a *perfect square trinomial*.

Aug 3-3:59 PM

Formulas:

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

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

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

Aug 3-4:00 PM