

Grade 10 Review: Factoring Quadratics

Note Title

06/10/2017

I. Factoring can be thought of as "multiplication backwards". You are "undoing" a multiplication to write out the question in the form of factors (things that are multiplied).

II. Types of Factoring Questions:

a) Greatest Common Factor (GCF)

e.g. 1 $18x^2 - 14x + 12x^3 - 22$
 $2(9x^2 - 7x + 6x^3 - 11)$ done

e.g. 2 $39x^2y + 13xy - 52x^2y^2$
 $13xy(3x + 1 - 4xy)$

ALWAYS BEGIN BY GCF FACTORING

b) Simple trinomial - "undo" a FOIL

recall when multiplying two ²binomials

$(x+5)(2x-1)$ First
 $2x^2 - x + 10x - 5$ Outside

3 ²trinomial: $2x^2 + 9x - 5$ Inside

e.g. 1 $m^2 + 5m + 6$ Last trinomial "simple" "no coefficient"

$(m+2)(m+3)$ Step 1 find 2 #'s that multiply to 6

step 2: add up to middle 5

e.g. 2 $a^2 - 11a + 30$ "two negative factors" of 30
 $(a-5)(a-6)$

e.g. 3 $m^2 - m - 72$ + & - factor
 $(m+8)(m-9)$ + 8/-9

TRY 2: $y^2 + 13y + 36$ & $x^2 + 8x - 20$
 $(y+4)(y+9)$ & $(x+10)(x-2)$

c) Difference of Squares
↓ subtraction
 x^2

CUE ONLY TWO TERMS & MINUS SIGN

e.g. $9x^2 - 4$

Square root each term

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

WHY?

$$9x^2 - 6x + 6x - 4$$

0

$$9x^2 - 4$$

TRY THESE

i) $169x^4 - y^2$
 $(13x^2 + y)(13x^2 - y)$

ii) $49x^2 - 81y^2$
 $(7x - 9y)(7x + 9y)$

BEWARE THE x^4 questions

$$x^4 - 16$$
$$(x^2 + 4)(x^2 - 4)$$
$$(x^2 + 4)(x + 2)(x - 2)$$

Messy Trinomials coefficient here in front of squared term

$$3x^2 + 13x + 4$$

GCF? NO... messy

$$3x^2 + 13x + 4$$

$$a \times c = \quad b =$$

$$3 \times 4 = 12 \quad 13$$

decomposition

$$3x^2 + 12x + 1x + 4$$
 Factors of 12 that add to 13

$$3x(x+4) + 1(x+4)$$
 12, 1

$$(3x+1)(x+4)$$

e.g. 2 $4x^2 - 20x + 25$

GCF? NO ☹️

$$-10x \quad -10x$$

$$a \times c \quad b$$

$$4x^2 - 10x \quad -10x + 25$$

$$4 \times 25 \quad -20$$

$$2x(2x-5) - 5(2x-5)$$

$$100 \quad -20$$

$$-10, -10$$

$$(2x-5)(2x-5)$$

or $(2x-5)^2$