Factoring Polynomials

June-25-18
9:27 AM

PRE-CALCULUS 11
QUADRATIC EQUATIONS
FACTORING POLYNOMIALS

A. Definitions

1. **factor:** terms or expressions that when multiplied form a product.
2. **monomial:** an algebra expression containing one term.
3. **binomial:** an algebra expression containing two terms.
4. **trinomial:** an algebra expression containing three terms.
5. **polynomial:** an algebra expression containing many terms.

B. Factoring Polynomial Review

Factor the following.

1) $10x^2 - 30x$

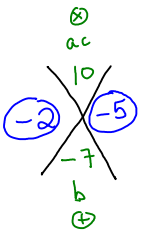
Factor out GCF.

$10x(x-3)$

GCF

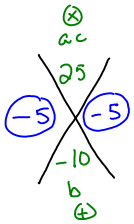
2) $x^2 - 7x + 10$
a b c.

Use diamond method.



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

3) $x^2 - 10x + 25$
a b c.



$(x-5)(x-5)$
or
$(x-5)^2$

Perfect Square Trinomial

4) $8xy^3 - 8xy^2 - 160xy$

$8xy(y^2 - y - 20)$

$8xy(y - 5)(y + 4)$

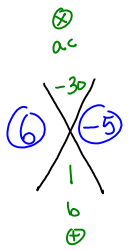
5) $x^2 - 64$ Difference of Squares

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

6) $-2x^2 + 98y^2$

$-2(x^2 - 49y^2)$

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



7) $2x^2 + x - 15$
a b c.

Complex Trinomial

Decomposition Method

a) Start with the diamond.

b) Break down middle term using the factors

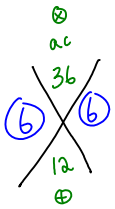
c) Group first two terms and last two terms.

d) Factor out GCF from each bracket.

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

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

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



8) $4x^2+12x+9$

$\left(x+\frac{6}{4}\right)\left(x+\frac{6}{4}\right)$

$\left(x+\frac{3}{2}\right)\left(x+\frac{3}{2}\right)$

$(2x+3)(2x+3)$

or

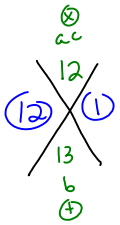
$(2x+3)^2$.

Ninja Method

a) Use diamond method.
b) Set up brackets
c) Take the "a" value and make a denominator for each factor in brackets.
d) Reduce fractions to lowest terms.
e) Any leftover denominators get moved to the front of the bracket.

9) $9x^2+39x+12$

Remove GCF first.



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

$\left(x+\frac{12}{3}\right)\left(x+\frac{1}{3}\right)$

$(x+4)\left(x+\frac{1}{3}\right)$

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

Assignment: Pg. 176 #3 – 6