2.5 Part 1

Monday, June 27, 2022 9:22 AM

2.5 Factoring polynomial ax^2+bx+c part 1

Factoring trinomials of the form: ax^2+bx+c by **Decomposition**

1. Find two numbers who have a product of "ac" and add to "b"
2. Replace the middle term using your two numbers
3. Factor out a GCF from the first pair of terms and another GCF from the second pair of terms
4. Rewrite the trinomial as a product of the common binomial and the remaining terms

Example 1: Factor the polynomial by decomposition

a) x^2+5x+6

① $(1)(6)=6$

$2 \times 3 = 6$
$2+3=5$

factors of 6
1×6
2×3

② $1x^2+2x+3x+6$

Replaced $5x$ with $2x+3x$

③ $1x^2+2x+3x+6$
$x(x+2)+3(x+2)$

④ $(x+2)(x+3)$

b) f^2-2f-8

$(1)(-8)=-8$

$2 \times -4 = -8$
$2+-4=-2$

-1×8
-2×4
$2 \times (-4)$

$f^2+2f-4f-8$
$f(f+2)-4(f+2)$
$(f+2)(f-4)$

c) $6x^2+17x+5$

$6(5)=30$

1×30
2×15

$2+15=17$

$6x^2+2x+15x+5$
$2x(3x+1)+5(3x+1)$
$(3x+1)(2x+5)$

d) $2x^2-5x-3$

$2(-3)=-6$

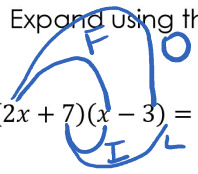
$1+-6=-5$

-1×6
-2×3
1×-6
2×-3

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

Example 2: Expand using the distributive property to confirm the polynomial has been factored correctly.

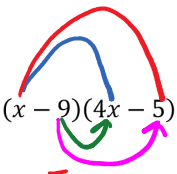
a) $(2x + 7)(x - 3) = 2x^2 + x - 21$



$2x^2 - 6x + 7x - 21$

$2x^2 + 1x - 21$

b) $(x - 9)(4x - 5) = 4x^2 - 41x + 45$



$4x^2 - 5x - 36x + 45$

$4x^2 - 41x + 45$

Mrs. Shaw

F. & P.-C. 10