I will be able to factor complex trinomials

Checking In

Minds on Factoring simple trinomials revisitied

Action! Factoring complex trinomials

Consolidation Your turn! Practice questions. Game on.

Minds on On Scrap Paper

Factor:

a) $c^2 + 5c - 14$

Two numbers x to -14 and add to 5.

$(c+7)(c-2)$

b) $4b^2 - 36b + 72$

$= 4(b^2 - 9b + 18)$

$= 4(b-3)(b-6)$

c) $3x^2 + 11x + 6$

Can't common factor!

Action!

4.4 - Factoring Quadratics: ax^2+bx+c

- Last day, we factored ***simple trinomials*** (when the value of a, the coefficient in front of x^2, is 1).

$$ax^2+bx+c,\ a = 1$$

- Today, we will learn to factor ***complex trinomials*** (when the value of a is **not** 1).

$$ax^2+bx+c,\ a \neq 1$$

Decomposition

Factor: $3n^2 - 11n - 4$

a, b, c

1. Can we factor out a?
2. Multiply $a \times c = -12$
3. Find two numbers that multiply to $a \times c$ and add to b.
4. Replace middle term with our two numbers.
5. Factor pairs.
6. Common factor.

× −12 + −11

−12 and 1

$3n^2 - 12n + 1n - 4$

$= 3n(n-4) + 1(n-4)$

$= (n-4)(3n+1)$

Example 2:

Factor: $4x^2 - 16x + 15$ (a, b, c)

$a \times c = 60$

Find two numbers that multiply to 60 and to -16

↳ -10 and -6

$= 4x^2 - 10x - 6x + 15$

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

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

Example 3:

Factor: $2c^2 + 5c - 12$

$a \times c = -24$

Two #s $\times$ to -24, $+$ to $+5 \Rightarrow +8$ and -3

$= 2c^2 + 8c - 3c - 12$

$= 2c(c+4) - 3(c+4)$

$= (c+4)(2c-3)$

Example 4:

Factor: $2x^2 + x - 6$

$a \times c = -12$

two #s that $\times$ to -12, $+$ to $+1 \Rightarrow +4$ and -3

$= 2x^2 + 4x - 3x - 6$

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

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

Exit Question...? Practice in Textbook?

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