Factoring Complex Trinomials ($ax^2 + bx + c$, $a \ne 1$) Part 2

Breaking Up the Middle Term (bx)

Expand (x + 4)(2x + 3). What are the x-terms?

$$= 2x^{2} + 6x + x + 3$$

$$= 2x^{2} + 6x + x + 3$$

$$= 2x^{2} + 7x + 3 + 4 + 4x + 3$$

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Factoring Complex Trinomials (ax² + bx + c, a \neq 1)

Part 2

March 29/2011

Expand (x + 4)(2x + 3). What are the x-terms?

$$(x + 4)(2x + 3) = 2x^2 + 3x + 8x + 12$$

$$= 2x^2 + 11x + 12$$

To factor $2x^2 + 11x + 12$, we need to do these steps in reverse order.

How do the numbers 3 and 8 relate to 2, 11, and 12?

$$3 + 8 = 11$$
 $3 \times 8 = 2 \times 12 = 24$

Once you have broken the middle term, you can factor by grouping

$$2x^{2} + 11x + 12 = 2x^{2} + 3x + 8x + 12$$

$$= x(2x+3) + 4(2x+3)$$

$$= x a + 4 a$$

$$= a(x+4)$$

$$= (2x+3)(x+4)$$

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Ex. Factor 6m² + 13m - 5

Numbers add to: 13 (sum)

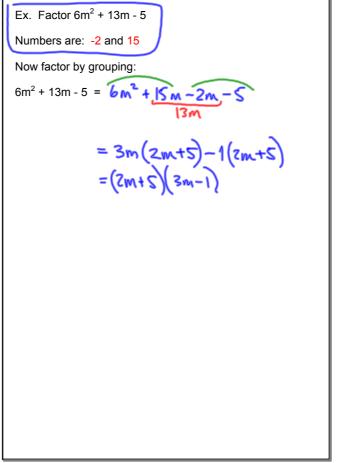
Numbers multiply to: -30 (product) 6 (-5)

Numbers are:

15 and -2 (integers)

This technique is called SPI (sum, product, integers)

S - Sum P - product
1 - integers



Apr 3-8:57 PM

