3.5a Factoring $x^2 + bx + c$

A trinomial is factorable if certain conditions are present. Consider the expansion of:

$$(x + 2)(x + 3) = x^2 + 3x + 2x + 6$$

$$x^2 + 5x + 6$$

Now break down these trinomials into factors...

ex. $x^2 + 5x + 6$

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

ex. $x^2 + 3x - 10$

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

We're always looking for factors of c that have a sum of b

→ constant term

middle term

Try these examples

a) $x^2 + 10x + 21$

$$(x + 3)(x + 7)$$

b) $x^2 - x - 20$

$$= (x - 5)(x + 4)$$

c) $x^2 - 11x + 28$

$$= (x - 4)(x - 7)$$

d) $x^2 + 5x - 6$

$$= (x + 6)(x - 1)$$

e) $x^2 + x - 56$

$$= (x - 7)(x + 8)$$

f) $2x^2 - 8x - 12$

$$= (2x + \quad)(x - \quad)$$

not factorable!

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Hand in c) for each next class