

BE - Algebra 2 WEDNESDAY 10-14-09

Factor $\Rightarrow$ GCF or FBC, if not factorable,
write "prime polynomial"

① $14x^2y^2 + 42xy^3$

② $35x^3y^4 - 60x^4y$

③ $3st^2 - 9s^3t + 6s^2t^2$

④ $2aby^2 + 3cx^3d^2 + 8adx$

• Homework review: Pg. 242 #4, 5, 6, 15-20

Answers: ④ $-6x(2x+1)$ ⑤ $a(a+5+b)$

⑥ $(x+7)(3-y)$ ⑦ $2x(y^3-5)$

⑧ $6ab^2(a+3b)$ ⑨ $2cd^2(6d-4c+5c^4d)$

⑩ PRIME ⑪ $(2z-3)(4y-3)$

⑫ $(3a+1)(x-5)$

Factoring Trinomials of the form:

$ax^2 + bx + c \Rightarrow$ if they are not prime polynomial of course.

MUST BE IN THIS FORM, IF NOT, PUT IN THIS FORM!

"Magic Number" Method

- Find 2 numbers that sum to "b" and multiply to "ac"
- SPLIT "MIDDLE" term into these two "magic terms"
- Factor By Grouping

(EX)

$$5x^2 - 13x + 6$$

$$\text{sum} = b = -13$$

$$\text{prod} = ac = +30$$

$$(5x^2 - 3x) + (-10x + 6)$$

CHANGE $+6$ to $+(-10x)$

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

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

NOTES

Find magic numbers, get signs correct

$$\text{NOTE: } -15 + 2 = -13$$

$$-15(2) \neq 30$$

$$\text{Try } -10 - 3 = -13$$

$$-10(-3) = +30 \checkmark$$

$$\text{Check: } (5x - 3)(x - 2)$$

(FOIL)

$$5x^2 - 10x - 3x + 6$$

$$5x^2 - 13x + 6 \checkmark$$

Factor:

$$\textcircled{\text{ex}} \quad y^2 + 2y^2 - y - y - 5$$

$$3y^2 - 2y - 5$$

Standard Form:
 $ax^2 + bx + c$

$$\text{sum} = b = -2$$

$$\text{prod} = ac = -15$$

$$\begin{array}{c} \swarrow \quad \searrow \\ \textcircled{+3} \quad \textcircled{-5} \end{array}$$

SPLIT MIDDLE TERM

$$3y^2 + \textcircled{+3y} - \textcircled{5y} - 5 \quad \text{FBG}$$

$$(3y^2 + 3y) + (-5y - 5)$$

$$\underline{3y(y + 1)} + \underline{-5(y + 1)}$$

TAKE OUT GCF
OF $(y + 1)$

$$\boxed{\underline{(y + 1)}(3y - 5)}$$

Check:
(FOIL)

$$(y + 1)(3y - 5)$$

$$3y^2 - 5y + 3y - 5$$

$$3y^2 - 2y - 5 \checkmark$$

Ex Factor

$$2x^2 + 7x + 3$$

$$\text{Sum} \Rightarrow 7$$

$$\text{prod} \Rightarrow 6$$

$$\begin{array}{c} \diagup \quad \diagdown \\ +1 \quad +6 \end{array}$$

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

$$x(2x + 1) + 3(2x + 1)$$

$$\boxed{(2x+1)(x+3)} \quad \text{Check w/ FOIL} \Rightarrow \checkmark$$

A very useful shortcut:

Iff the leading coefficient is +1, that is, if $a = +1$, then no factoring by grouping is needed, as soon as you find the magic numbers you have the factors.

Ex $x^2 + 5x - 6$

$$\text{Sum} \Rightarrow 5$$

$$\text{prod} \Rightarrow -6$$

$$\begin{array}{c} \diagup \quad \diagdown \\ -1 \quad +6 \end{array}$$

$$\therefore \boxed{(x-1)(x+6)}$$

Check w/ FOIL? $\checkmark$

• Homework: Pg. 242 # 21 to 27