

Algebra I BE -

Friday 1-20-12

$$y = f(x) = 3x + 2 \quad y = g(x) = x^2 - 2x$$

① $f(3) = ?$

② $g(5) = ?$

③ $f(-1) = ?$

④ $g(-2) = ?$

⑤ $f(x+2) = ?$

⑥ Find the GCF of $12a^2$, $16a$

THERE ARE MANY WAYS TO FACTOR POLYNOMIALS \Rightarrow FINDING "SMALLER DEGREE" POLYNOMIALS THAT YOU CAN MULTIPLY TOGETHER TO GET THE ORIGINAL POLY--

| | |
|---------------------------|---|
| $(EX) \quad x^2 + 6x + 9$ | ORIGINAL, degree is 2 |
| $(x+3)(x+3)$ | FACTORS, THE DEGREE OF EACH BINOMIAL IS 1 |

THE "STARTING" METHOD, AND THE ONE YOU WILL LOOK FOR TO SEE IF YOU CAN USE IT, AND WILL USE MOST OFTEN IS UNDOING THE DISTRIBUTIVE PROPERTY USING THE

| | | |
|------|---------------------------------|-------------------------------------|
| GCF: | $(EX) \quad 12a^2 + 16a$ | 2 ND DEGREE BINOMIAL |
| | $\quad \underline{4a} (3a + 4)$ | 1 ST DEGREE MONOMIAL, |
| | $\quad \uparrow$ | 1 ST DEGREE BINOMIAL |
| | $\quad \text{GCF}$ | |

Practice: Using THE GCF to UNDO
the Distributive Property

$$\textcircled{\text{EX}} \quad 9x^2 + 27x$$

$$9x(x + 3)$$

$$\textcircled{\text{EX}} \quad 15x^3 - 3x$$

$$3x(5x^2 - 1)$$

WHAT IF you "miss" the GCF

$$\textcircled{\text{EX}} \quad 16x^2 + 32x$$

$$8x(2x + 4)$$

↑ ↑
A common FACTOR OF 2 REMAINS

$$8x \cdot 2(x + 2)$$

$$16x(x + 2)$$

↑
GCF of original problem

Ex 16
Pg 482

Factor:

$$18cd^2 + 12c^2d + 9cd$$

$$3cd(6d + 4c + 3)$$

Ex Factor:

$$12xy + 24xy^2 - 30x^2y^4$$

$$6xy(2 + 4y - 5xy^3)$$

How do you check any factorization to see if it is correct?

How do you know 3 · 8 are factors of 24?

$$6xy(2 + 4y - 5xy^3)$$

$$12xy + 24xy^2 - 30x^2y^4 \quad \checkmark$$

Zero Product
Property
(ZPP)
"Zippy"

If the products of
two factors is zero,
then AT least ONE of
the factors must be
zero.

If $ab = 0$, either $a = 0$,
 $b = 0$
or a and $b = 0$

Solve using ZPP

⊗ $3x = 0$

⊗ $xy = 0$

⊗ $(x-5)(x-2) = 0$

⊗ $(x+3)(x-4) = 0$

⊗ $(3x+1)(2x-5) = 0$

Solve: $X = 7X$ How did you do it?

Solve: $X^2 = 7X$

Did you run into a problem? You can't get X "by itself" because X^2 and X are unlike terms!! What to do?

ZPP AND GCF to the rescue!!

First, change $X^2 = 7X$ into something you can factor by undoing the DP

$$\begin{array}{r} X^2 = 7X \\ -7X \quad -7X \\ \hline \end{array}$$

$$X^2 - 7X = 0$$

$$X(X - 7) = 0$$

Now, factor then use ZPP!
Finally, do checks.

$$\boxed{X = 0 \text{ or } X = 7} \quad \text{EX 5 Pg 483 Ch 9-2}$$

CK: $(0)^2 \stackrel{?}{=} 7(0)$ ✓
 $X = 0$

CK: $(7)^2 \stackrel{?}{=} 7(7)$
 $X = 7$ $49 \stackrel{?}{=} 49$ ✓

$$\textcircled{\text{EX}} \text{ SOLVE: } \begin{array}{r} 2x^2 = 5x \\ -5x \quad -5x \end{array}$$

$$2x^2 - 5x = 0$$

$$x(2x - 5) = 0$$

MENTAL MATH
 $(2x - 5) = 0$

$$2x - 5 = 0$$

$$2x = 5$$

$$x = \frac{5}{2}$$

$$x = \left\{ 0, \frac{5}{2} \right\}$$

ANSWER IN
 SET NOTATION

CK: $2(0)^2 \stackrel{?}{=} 5(0) \checkmark$

$$x = 0$$

CK: $2\left(\frac{5}{2}\right)^2 \stackrel{?}{=} 5\left(\frac{5}{2}\right)$

$$x = \frac{5}{2}$$

$$2 \cdot \frac{25}{4} \stackrel{?}{=} \frac{25}{2} \checkmark$$

Homework: • Read Ch 9-2

• Pg 484 # 4 to 12