Bell Ringer

Wednesday 9/26

Factor.

1. $x^2 - 49$ $x^2+0x-49$ $(x+7)(x-7)$

2. $3x^2 - 75$ $3(x^2-25)$ $3(x-5)(x+5)$

3. $2x^2 + 72$ $2(x^2+36)$

4. $x^2 - 12x + 20$ $(x-2)(x-10)$ $-2 \times -10 = 20$, $-2 + -10 = -12$

6 minutes

1 - Organize folders

- update pink sheet
- passed on right, need to correct on left
- name on folder, folder in bin

2 - Fill out PTC form

- keep face down on desk when finished

done early? work on blue ws - due tomorrow

Review

Simplify and leave answers in exact form (no decimals)

$\sqrt{28} = 2\sqrt{7}$ $\sqrt{45} = 3\sqrt{5}$ $4 + \sqrt{8} = 2\sqrt{2}$

$\frac{\sqrt{50}}{5} = \frac{5\sqrt{2}}{5} = \sqrt{2}$ $\frac{6 + \sqrt{72}}{3} =$

$\sqrt{50} = 5\sqrt{2}$ $\sqrt{72} = 3 \cdot 2\sqrt{2}$ $6\sqrt{2}$

$\frac{6 + 6\sqrt{2}}{3}$

$\frac{6}{3} + \frac{6\sqrt{2}}{3}$ $2 + 2\sqrt{2}$

3.7 Solving Quadratics with the Quadratic Formula

pg 176

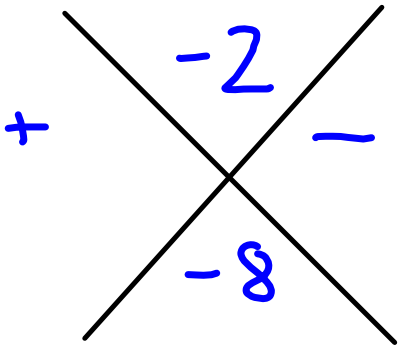
Identify a, b, and c

$ax^2 + bx + c = 0$

$3x^2 - 4x + 7$	$1x^2 + 2x - 11$	$-5x^2 + 1x + 8$
a = 3	a = 1	a = -5
b = -4	b = 2	b = 1
c = 7	c = -11	c = 8

Can you factor and solve this...

$2x^2 - 8x - 1 = 0$



Quadratic Formula...

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

How can you remember this...?

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve for x

$2x^2 - 8x - 1 = 0$

a = 2

b = -8

c = -1

$$\frac{8 \pm \sqrt{(-8)^2 - 4(2)(-1)}}{2(2)}$$

$$= \frac{8 \pm \sqrt{64 + 8}}{4} = \frac{8 \pm \sqrt{72}}{4}$$

$\sqrt{72} = 6\sqrt{2}$

$9 \cdot 8$ ($3 \cdot 3$) $4 \cdot 2$ ($2 \cdot 2$)

$$= \frac{8 \pm 6\sqrt{2}}{4}$$

$$x = \frac{4 \pm 3\sqrt{2}}{2}$$

Guess what... the Quadratic Formula works for **ALL** trinomials!!!!!!!

$ax^2+bx+c=0$

"Got it" on pg. 177 $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

Regular factoring

$x^2 - 4x = 21$

$-21 \quad -21$

$x^2-4x-21=0$

-21, $+3$, -7, -4

$(x+3)(x-7)=0$

$x+3=0 \quad x-7=0$

$-3 \quad -3 \quad +7 \quad +7$

$x=-3, 7$

Quadratic formula

$x^2 - 4x = 21$

$x^2-4x-21=0$ $a=1$ $b=-4$ $c=-21$

$x = \frac{4 \pm \sqrt{(-4)^2-4(1)(-21)}}{2(1)}$

$= \frac{4 \pm \sqrt{100}}{2}$

$\frac{4 \pm 10}{2} = \frac{14}{2} \quad \frac{-6}{2}$

$7, -3$

Problem 3 Choosing an Appropriate Method

not in book

Which method(s) would you choose to solve the equation? Explain your reasoning.

A $3x^2 - 9 = 0$

$+9 \quad +9$

$3x^2 = 9$

sqrt.

B $x^2 - x - 30 = 0$

-30, -6, $+5$, -1

factor

C $6x^2 + 13x - 17 = 0$

quad.

-102, $+13$

D $x^2 - 5x + 3 = 0$

quad.

$+3$, 1, 3, -1, -3, -5

E $-16x^2 - 50x + 21 = 0$

quad.

"Got it" pg. 180

Which method(s) would you choose to solve each equation? Why?

a. $x^2 - 8x + 12 = 0$

fact

-2 12 -6 -8

b. $169x^2 = 36$

sqrt.

$169x^2 + 0x - 36 = 0$

c. $5x^2 + 13x - 1 = 0$

-5 +13

quad

"Got it" pg 180 - part c

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve for x

$5x^2 + 13x - 1 = 0$

a = 5

b = 13

c = −1

$\sqrt{189}$

3 · 63

7 · 9

3 · 3

$$\frac{-(13) \pm \sqrt{(13)^2 - 4(5)(-1)}}{2(5)} = \frac{-13 \pm \sqrt{189}}{10}$$

$$\frac{-13 \pm 3\sqrt{21}}{10}$$

The part under the radical sign is called the "discriminant"

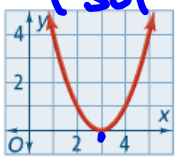
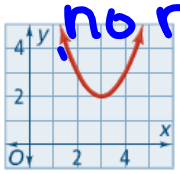
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

It can help you determine how many solutions there are to a quadratic equation...

pg. 181

take note

Key Concept Using the Discriminant

Discriminant	$b^2 - 4ac > 0$	$b^2 - 4ac = 0$	$b^2 - 4ac < 0$
Example	$x^2 - 6x + 7 = 0$ The discriminant is $(-6)^2 - 4(1)(7) = 8$, which is positive.	$x^2 - 6x + 9 = 0$ The discriminant is $(-6)^2 - 4(1)(9) = 0$.	$x^2 - 6x + 11 = 0$ The discriminant is $(-6)^2 - 4(1)(11) = -8$, which is negative.
			
Number of Solutions	There are two real-number solutions.	There is one real-number solution.	There are no real-number solutions.

$b^2 - 4ac =$ 2 sol | 1 sol | no real sol

positive zero negative

Problem 4 Using the Discriminant

not in book

How many real-number solutions does $2x^2 - 3x = -5$ have?

Try the got it on pg. 182

a. How many real-number solutions does $6x^2 - 5x = 7$ have?

b^2-4ac $6x^2-5x-7=0$ $-7 \quad -7$

$(-5)^2-4(6)(-7)$

$25+\sim\sim=+$

$=0$ $=-$

pos

SMII due Monday Name:_____

Discriminant and Quadratic Formula Hour:_____

Find the discriminant of each quadratic equation then state the number and type of solutions.

1) $-k^2 + 2k + 3 = 0$

2) $9x^2 - x + 12 = 0$

3) $-4n^2 - 12n - 9 = 0$

4) $4p^2 + 6p + 7 = 11$

Solve each equation with the quadratic formula.

5) $10n^2 - 8 = 0$

6) $4x^2 + 2x - 110 = 0$

7) $8x^2 + 12x - 9 = 0$

8) $2k^2 - 3k - 12 = 5$