

please pick up the chapter 4 recording sheet

and the  
**WARM UP**

only do the front side.

Solve the quadratic equation  
 by completing the square  
 (by dividing all terms by 4 to start)

$$\frac{4x^2}{4} - \frac{24x}{4} + \frac{13}{4} = \frac{0}{4}$$

$$x^2 - 6x + \frac{13}{4} = 0$$

$$x^2 - 6x + 9 = -\frac{13}{4} + \frac{9(4)}{1(4)}$$

$$x^2 - 6x + 9 = \frac{23}{4}$$

$$(x-3)^2 = \frac{23}{4}$$

$$\left(\frac{-6}{2}\right)^2 = 9$$

$$\frac{36}{4}$$

	$x - 3$
$x$	$x^2 - 3x$
$-3$	$-3x + 9$

$$\sqrt{(x-3)^2} = \sqrt{\frac{23}{4}}$$

$$x = 3 \pm \frac{\sqrt{23}}{2}$$

$$x-3 = \pm \sqrt{\frac{23}{4}}$$

$$x-3 = \pm \frac{\sqrt{23}}{2}$$

$$\pm \frac{\sqrt{23}}{2} + 3$$

$$x-3 = \pm \frac{\sqrt{23}}{2}$$

+3   13

Solve the same quadratic equation by completing the square but use the method mr. Cedarlund used in high school

$$4x^2 - 24x + 13 = 0$$

$$4(x^2 - 6x + 9) = -13 + 36$$

$$4(x-3)^2 = 23$$

divide by 4

$$\sqrt{(x-3)^2} = \sqrt{\frac{23}{4}}$$

$$x-3 = \pm \sqrt{\frac{23}{4}}$$

$$x-3 = \pm \frac{\sqrt{23}}{2}$$

$$x = 3 \pm \frac{\sqrt{23}}{2}$$

Ch. 4

"SOLVING"



INTERSECTIONS

...building on what you already know...

TODAY

Use a variety of **strategies**. to solve  
equations, including the use of our GDC



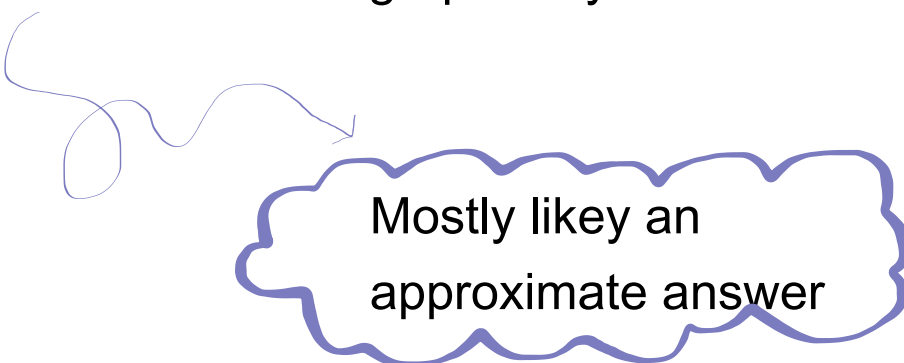
EXIT Ticket  
at end of  
class.

find the intersection  
of

$$y = -\frac{1}{x} \quad \text{and} \quad y = \sqrt{-x}$$

sometimes weird things happen  
when you try to find intersections

**\*about to solve graphically\***



Mostly likely an  
approximate answer

Go to the back side of the Warm Up.

Solve the equation

$$(x+3)^2 - 5 = 4$$

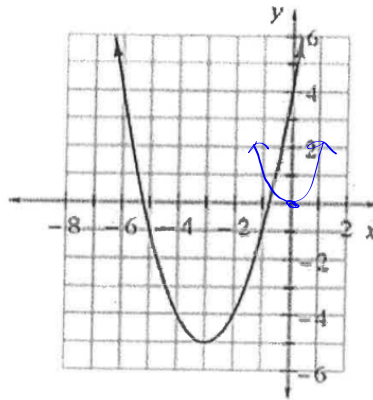
by only using the graph to the right

- a) what's the parent function of the graph shown

$$f(x) = x^2$$

- b) what is the function of the transformed function shown in the graph

$$f(x) = (x+3)^2 - 5$$



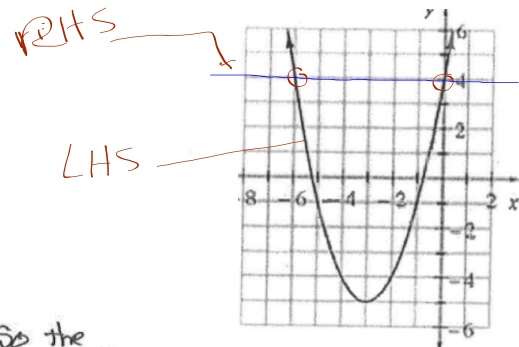
- c) Now graph the right side of the equation  $(x+3)^2 - 5 = 4$  ON to the graph

- d) Where does  $y=4$  intersect with  $y = (x+3)^2 - 5$  ??

$$\begin{aligned} & \text{at } (-6, 4) \\ & \text{and } (0, 4) \end{aligned}$$

- e) what are the x-values at this location(s)

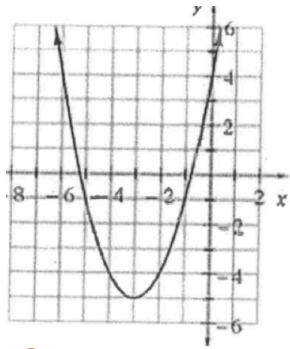
$$x = -6 \quad x = 0$$



- (f) So the solution(s) to the equation

$$(x+3)^2 - 5 = 4$$

$$\text{are } \underline{x = -6} \quad \underline{x = 0}$$



$$(x+3)^2 - 5 = 4$$

The graph was useful  
but...

What if we don't have  
an accurate graph?

or the solution is  
far off the grid?

$$\text{or } (x+3)^2 - 5 = 4.2$$

back to your notes

In the next few minutes you will be solving a variety of equations

1. Strive for exact answers when possible.  
If not possible, round to 2 or 3 decimal places.
2. Show steps/organized as usual using good notation.

$$4-4b$$

B

$$3\sqrt{4x-8} + 9 = 15$$

$\begin{matrix} -9 & -9 \end{matrix}$

$$3\sqrt{4x-8} = 6$$

divide by 3

$$\left(\sqrt{4x-8}\right)^2 = (2)^2$$

square both sides

$$4x-8 = 4$$

$$x = 3$$

$$3\sqrt{4x-8} + 9 = 15$$

$$3\sqrt{4(3)-8} + 9 = 15$$

$$3\sqrt{12-8} + 9$$

$$3\sqrt{4} + 9$$

$$3(2) + 9$$

$$15$$

$$15 \checkmark$$

Try using the graphical method (GDC)  
to solve the very same  
equation

$$3\sqrt{4x-8} + 9 = 15$$



next  $\rightarrow$

$$\boxed{4-4c}$$

- algebraically first
- then graphically

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

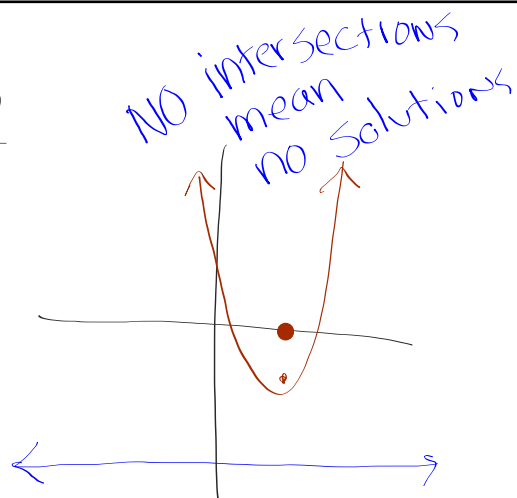
+2                    +2

$$\sqrt{(x-3)^2} = \sqrt{-3}$$

$$x-3 = \pm \sqrt{-3}$$

??

No  
Solutions



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

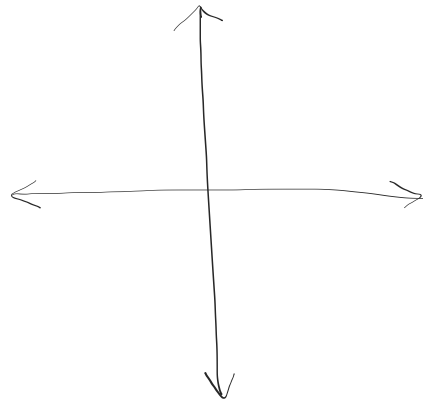
$+2$                        $+2$

$$\sqrt{(x-3)^2} = \sqrt{-3}$$

no solution

what about  
graphically?

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



Skip D and E

do (F)

Write the equation  
but solve graphically  
first.

**F**

$$|3-7x| = 6$$

graphically

check

$$\left|3 - \frac{7(9)}{7}\right| = 6$$

$$|3 - 9| = 6$$

$$|-6| = 6 \quad ?$$

$$6 = 6$$

$$|3 - 7x| = -6$$

inside

inside = RHS

$$3 - 7x = -6$$

$$-7x = -9$$

$$x = \frac{9}{7}$$

inside = -RHS

$$3 - 7x = -(-6)$$

$$3 - 7x = 6$$

$$-7x = 3$$

$$x = \frac{-3}{7}$$

now 

algebraically



$$\frac{6w-1}{5} - 3w = \frac{12w-16}{15}$$

clear fractions

$$3 \cdot \frac{6w-1}{5} - 15(3w) = \frac{12w-16}{15}$$

$$3(6w-1) - 45w = 12w-16$$

$$18w - 3 - 45w = 12w - 16$$

$$\begin{array}{r} -27w - 3 = 12w - 16 \\ +27w \qquad \qquad +27w \end{array}$$

$$\begin{array}{r} -3 = 39w - 16 \\ +16 \qquad \qquad +16 \end{array}$$

$$13 = 39w$$

$$\begin{array}{r} 39w = 13 \\ \hline 39 \quad 39 \end{array}$$

$$w = \frac{13}{39} = \left(\frac{1}{3}\right)$$

$$w = \frac{1}{3}$$

$$\frac{13}{39} = \frac{39w}{39}$$

$$\frac{1}{3} = w$$

# BB

then 1 more

## H

$$(x+2)^2 + 4(x+2) - 5 = 0$$

$$U^2 + 4U - 5 = 0$$

$$(U+5)(U-1) = 0$$

$$U \rightarrow (x+2)$$

$$U = -5$$

$$\uparrow$$

$$x+2 = -5$$

$$x = -7$$

$$U = 1$$

$$\uparrow$$

$$x+2 = 1$$

$$x = -1$$

# ASSIGNMENT

4 .....7-10, 13bc, 14

