

Provided your HW is done and you are using a pen of a different color, do a quick check of the solutions to yesterday's after test assignment.

3 minutes max

Ch.4

"SOLVING"

&

INTERSECTIONS

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

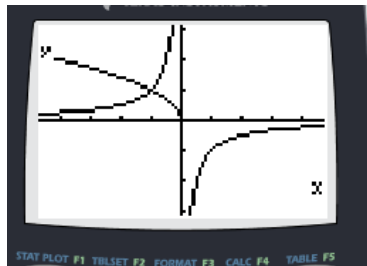
TODAY

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

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

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

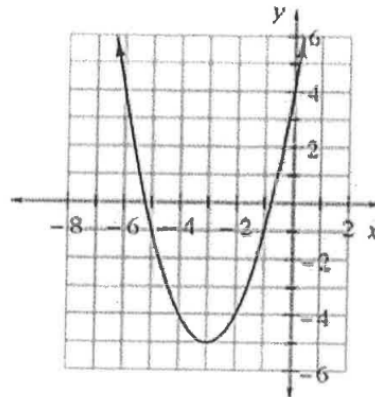
by only using the
graph to the right

- 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

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



Solve the equation

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

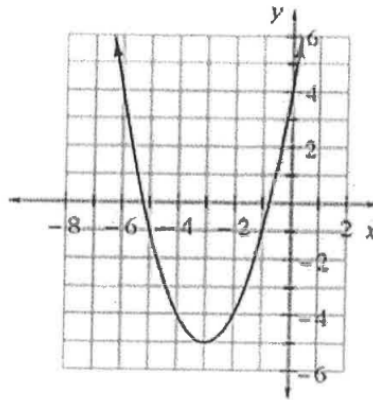
by only using the graph to the right

- 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

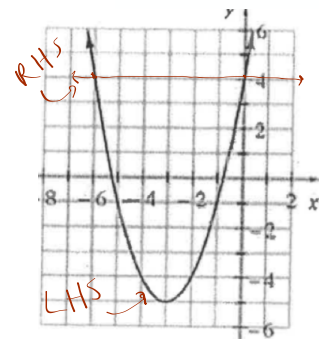
- d) Where does $y=4$ intersect with $y = (x+3)^2 - 5$??

$$(-6, 4) \quad (0, 4)$$

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

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

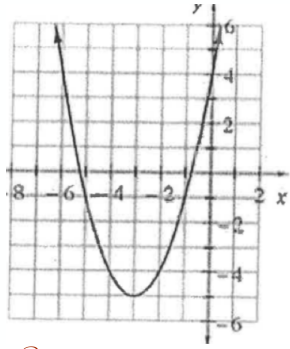
$$y = 4$$



- (f) So the solution(s) to the equation are x values!

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

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



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

The graph was useful
but...

What if we don't have
an accurate graph?
or the solution is
far off the grid?

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

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

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

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

divide by 3

$$\sqrt{4x-8} = 2$$

square both sides

$$4x-8 = 4$$

$$+8 \quad +8$$

$$4x = 12$$

$$x = 3$$

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

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

$$3\sqrt{12-8} + 9 = 15$$

$$3\sqrt{4} + 9 = 15$$

$$6 + 9 = 15$$

$$15 = 15 \quad \checkmark$$

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

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

next → ☺

$$4-4c$$

- algebraically first
- then graphically

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

$+2 \quad +2$

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

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

no solution

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

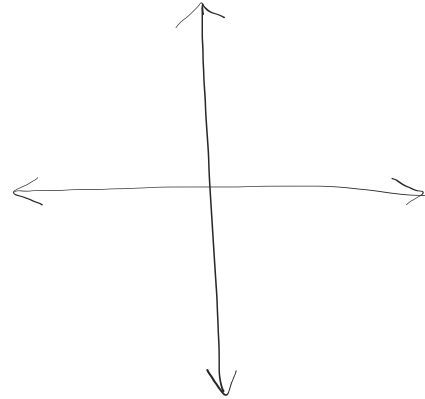
$+2 \quad +2$

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

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

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

inside

inside = RHS

inside
RHS

$$3-7x = -6$$

$$-7x = -9$$

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

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

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

$$-7x = 3$$

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

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

$$|3-9| = -6$$

$$\checkmark |-6| = -6$$

$$6 = 6$$

$$x \approx 1.28$$

$$x \approx -0.428$$

now



algebraically

$$8 \quad 3 \cancel{15} \left(\frac{6w-1}{\cancel{5}} \right) - \cancel{15} (3w) = \cancel{15} \left(\frac{12w-16}{\cancel{15}} \right)$$

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

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

$$\begin{array}{r} 13 = 39w \\ \hline 39 \quad 39 \\ \frac{1}{3} = w \end{array}$$

clear fractions

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

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

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

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

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

$$13 = 39w$$

$$\frac{113}{339} = \frac{39W}{39}$$

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

BB

then 1 more

H

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

ASSIGNMENT

47-10, 13bc, 14

