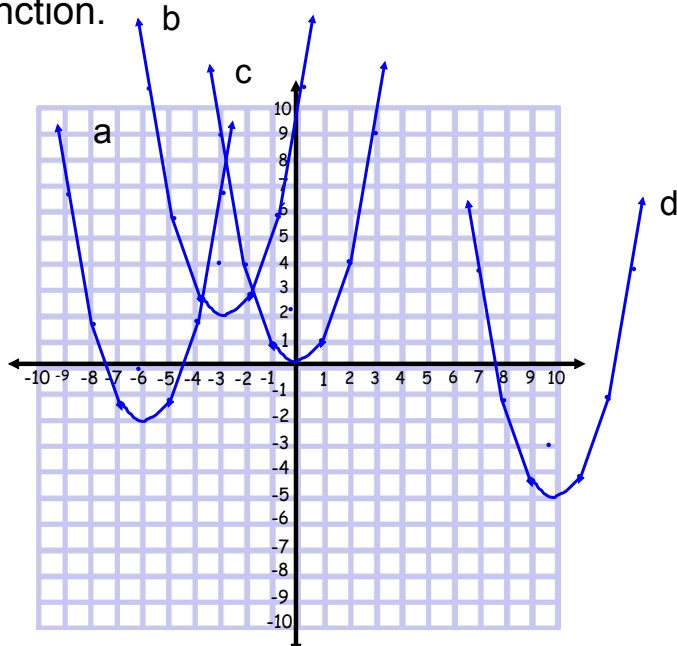


## Stick Quiz

For a-d Write an equation for each function.



For e-g describe the translations of the graph of  $y=x^2$

e.  $y = 8 + x^2$

f.  $y = 8 + (x - 2)^2 + 3$

g.  $y - 6 = (x + 5)^2$

Write the four equations.

a.  $y = (x + 6)^2 - 2$

b.  $y = (x + 3)^2 + 2$

c.  $y = x^2$

d.  $y = (x - 10)^2 - 5$

e. up 8

f. Right 2 up 11

g. left 5 up 6

a.  $y = x^2$

b.  $y = (x+2)^2 - 1$

c.  $y = (x-3)^2 + 4$

d.  $y+5 = 3 + (x-1)^2 - 5$

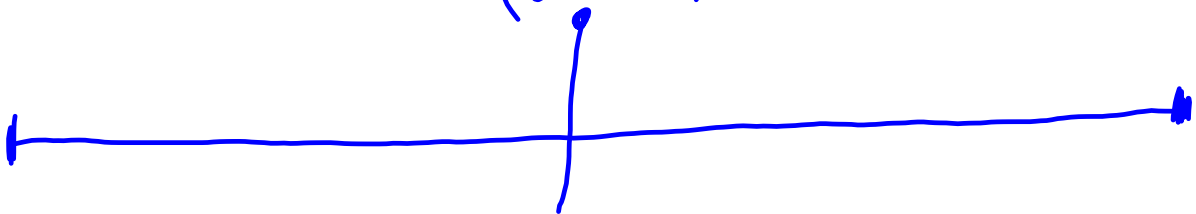
$$f(x) = -0.000234(x-80)^2 + 1.5$$

$$y = (x-h)^2 + k \quad (h, k)$$

$$(80, 1.5)$$

x feet    y feet

$$(80, 1.5)$$



$$(47, 33) \quad (s, m(s)) \quad (47, 15)$$

LESSON 2

## Transformations Unit

**I can** transform functions and explain the motion.

**I can** graph equations that have been transformed.

**I can** write the equations of graphs.

**Today: Reflections with the SQUARE ROOT family**

# Homework Questions

? ? ? ?

## Reflections and the Square Root Family



The parent function  $y = \sqrt{x}$

★ half of a parabola on its side.

Relatives are all of the square roots - look for something **square rooted!**



**Square Root Family**

NOT the **Sq Root Family**

$$y = \sqrt{x + 3} - 2$$

$$2\sqrt{x - 5} = y$$

$$y = x^2$$

$$y = |x + 7|$$

$$y = 5x + 2$$

Parent Function

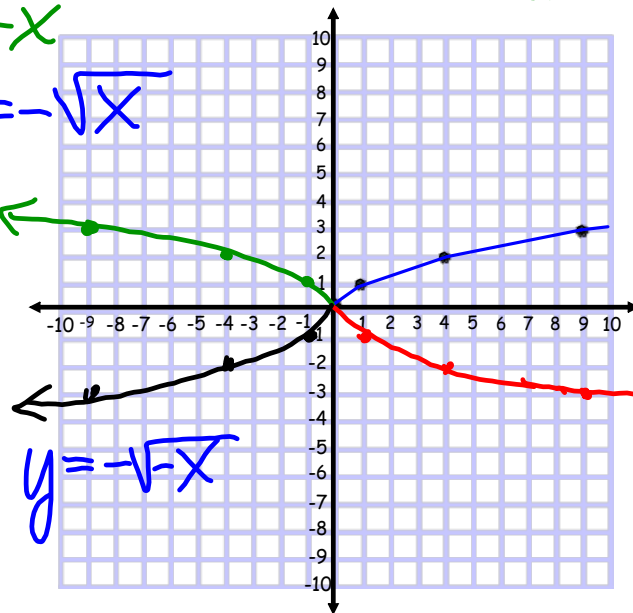
$$y = \sqrt{x}$$

inside - horizontal  
outside - vertical.

x	y
-25	$\sqrt{+25}$
-16	$\sqrt{16}$
-9	3
-4	2
-1	1
0	0
1	
4	
9	
16	
25	

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

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

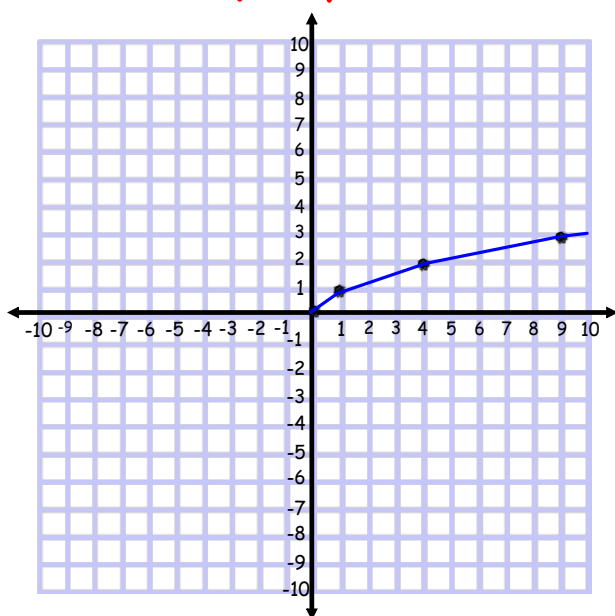


$$y = -\sqrt{-x}$$

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

Explore REFLECTIONS by using the square root family!

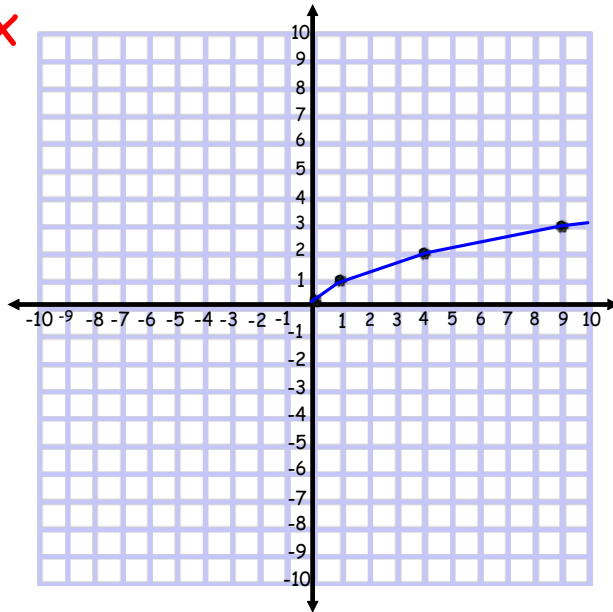
Let's do some shifting!  $y = \sqrt{x}$



- 1)  $y = \sqrt{x - 2}$
- 2)  $y = \sqrt{x + 5}$
- 3)  $y = \sqrt{x - 4} + 3$
- 4)  $y = \sqrt{x + 2} - 6$
- 5)  $y = \sqrt{x - 9} + 9$
- 6)  $y = \sqrt{x} - 6$
- 7)  $y = \sqrt{x} + 10$
- 8)  $y = \sqrt{x + 5} - 8$

Now YOU write the equations!

$$y = \sqrt{x}$$

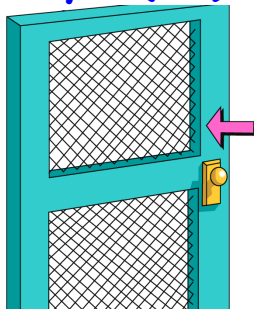


Given:  $y = f(x)$

reflection	reflection
reflection	reflection

$$y = f(-x)$$

is a reflection over the **y-axis**



Like a door open and closing. Imagine where the hinges are and how it would "reflect"

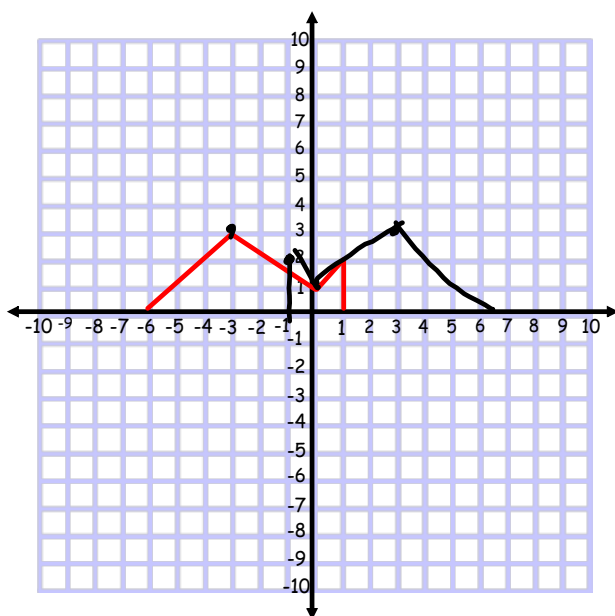
$$y = -f(x)$$

is a reflection over the **x-axis**



Like a trap door, imagine where the hinges are and how it would reflect.

$$y = f(x)$$



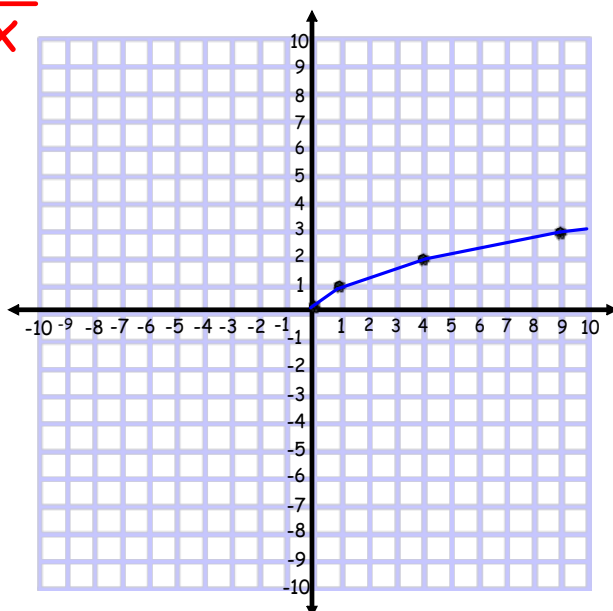
$$y = f(-x)$$

$$y = -f(x)$$

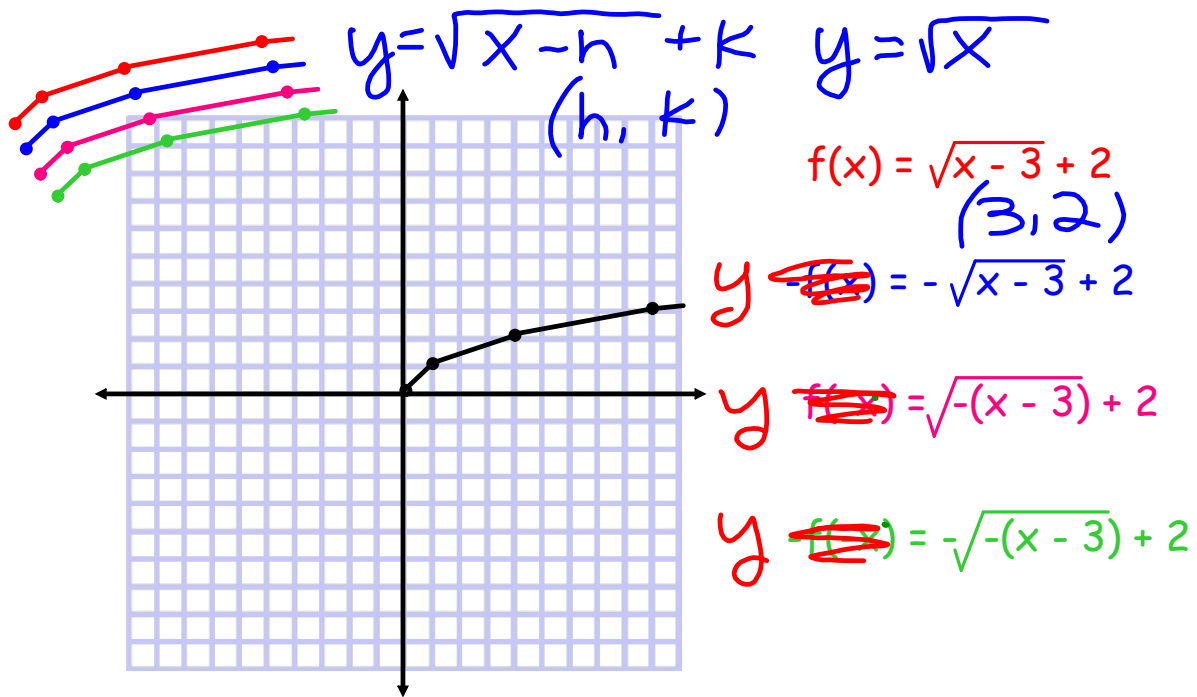
$$y = -f(-x)$$

Now YOU write the equations!

$$y = \sqrt{x}$$







Solve for  $y$  to get two separate functions to graph!

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

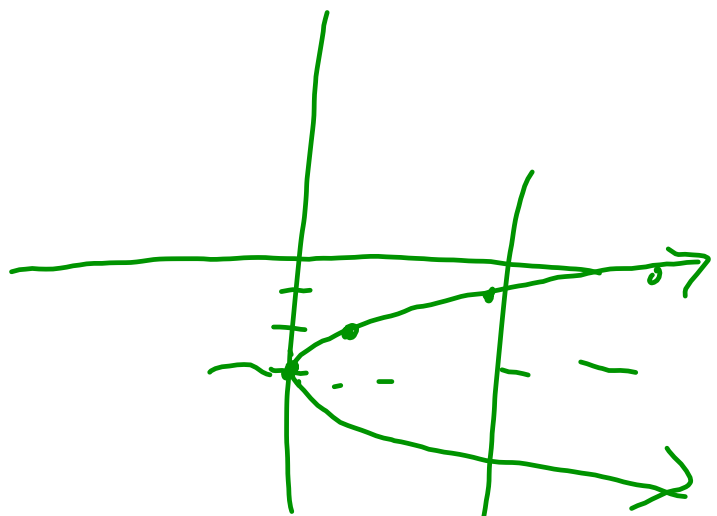
$$y^2 = x + 5$$

$$(y+4)^2 = x + 1$$

$$y+3 = \pm \sqrt{x}$$

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

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



Homework  
WS#3

