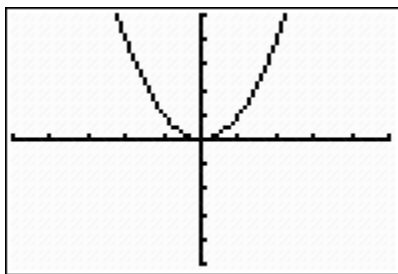


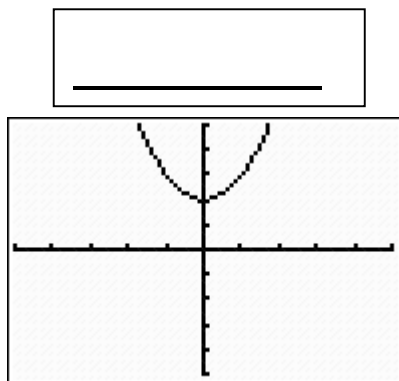
Math-3A Lesson 1-4 (Abs. Value and Square Root Functions)

Describe how each function transforms the “parent” $f(x)$.

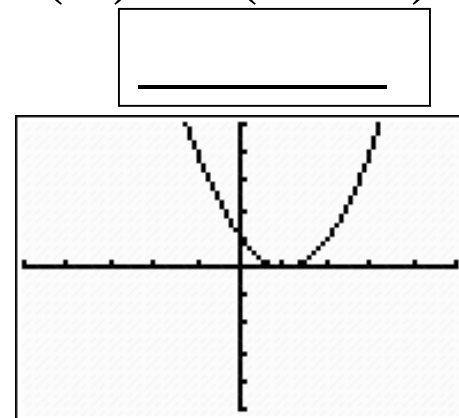
$$f(x) = x^2$$



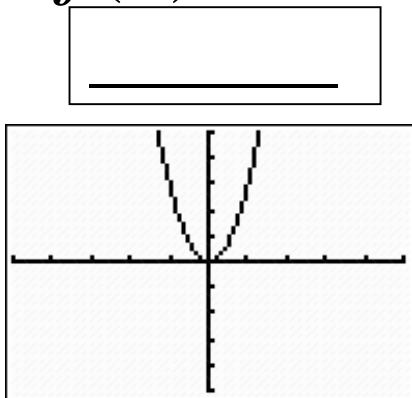
$$g(x) = x^2 + 2$$



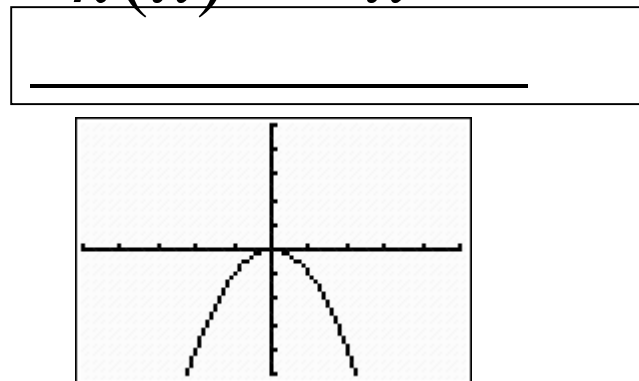
$$h(x) = (x - 1)^2$$



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



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



Absolute Value Function

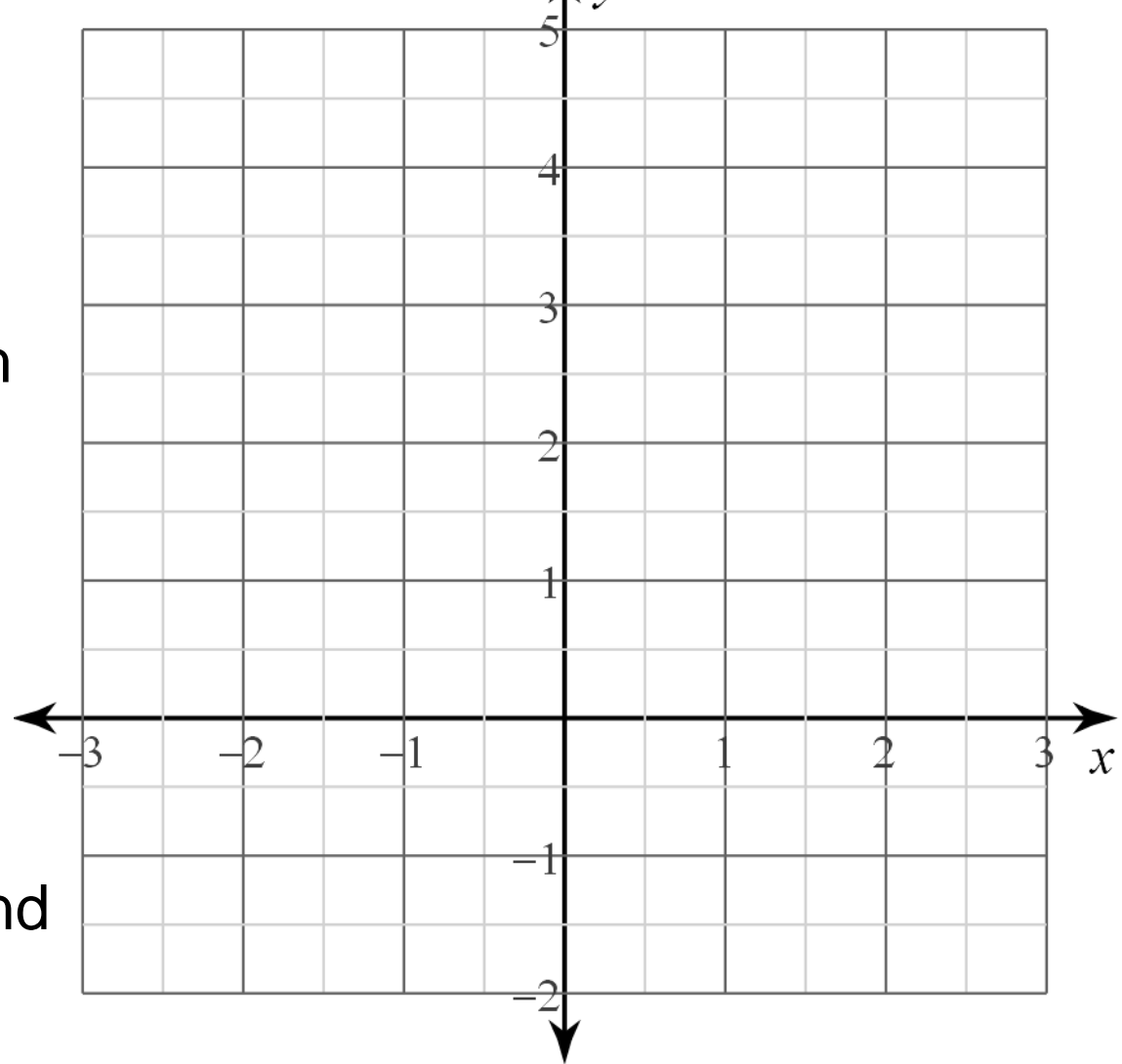
$$f(x) = |x|$$

Fill in the table, then graph the x-y pairs.

x	y
-2	2
-1	
0	
1	
2	

$$y = |-2|$$

$|-2|$ means
“what is the
distance
between -2 and
zero?”



Just like the Quadratic Function, the point (0, 0) is the vertex and there is a point in the position “right 1, up 1” (from the vertex).

$$f(x) = |x|$$

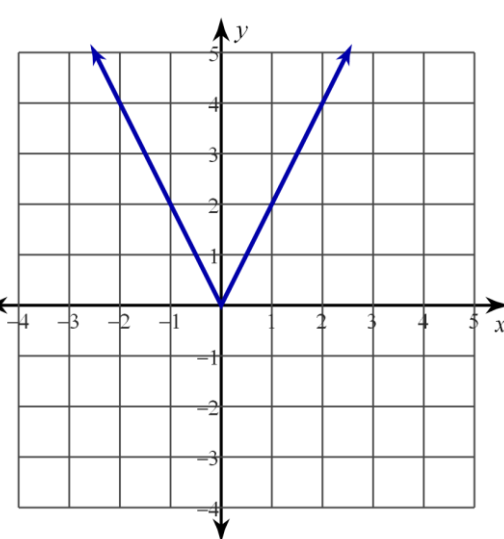
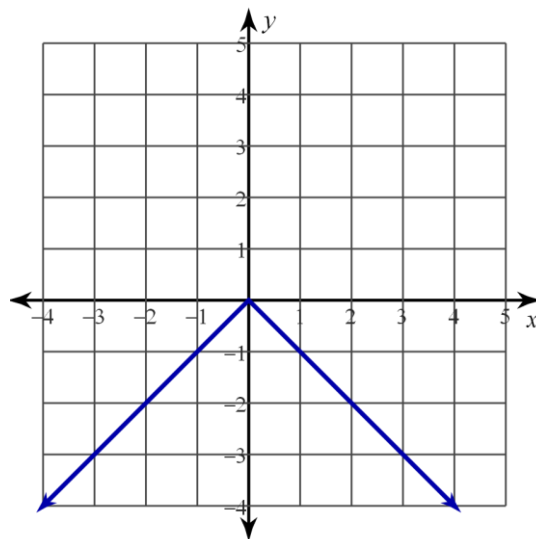
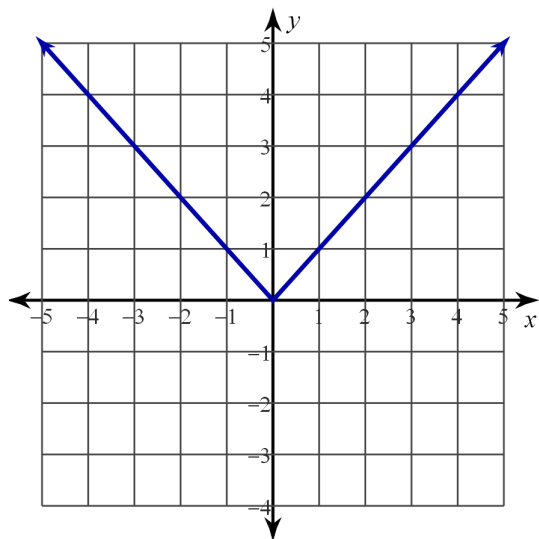
x	y
-2	2
-1	1
0	0
1	1
2	2

$$g(x) = -|x|$$

x	y
-2	-2
-1	-1
0	0
1	-1
2	-2

$$g(x) = 2|x|$$

x	y
-2	4
-1	2
0	0
1	2
2	4



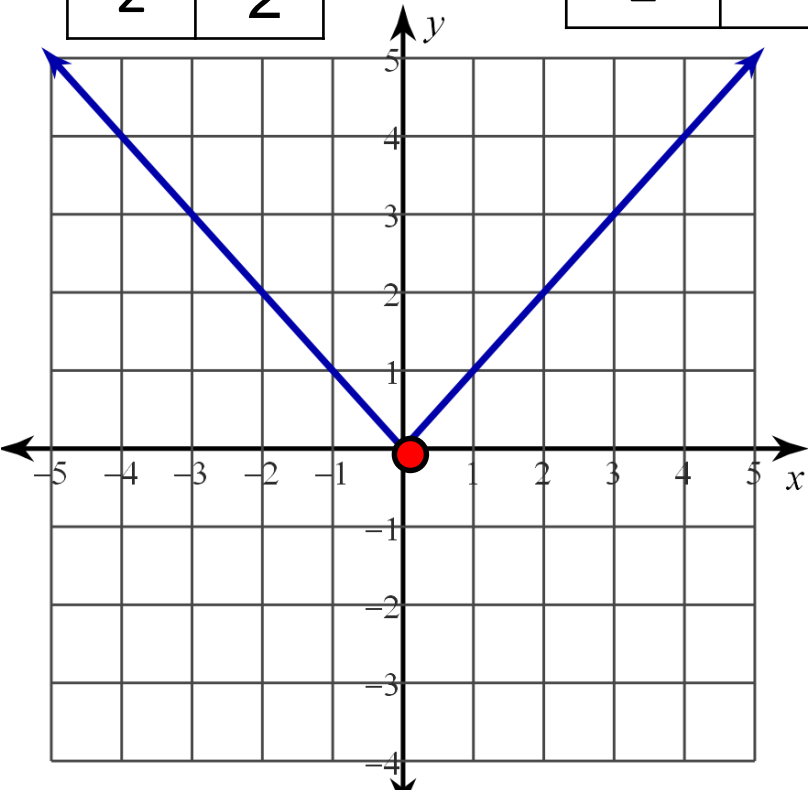
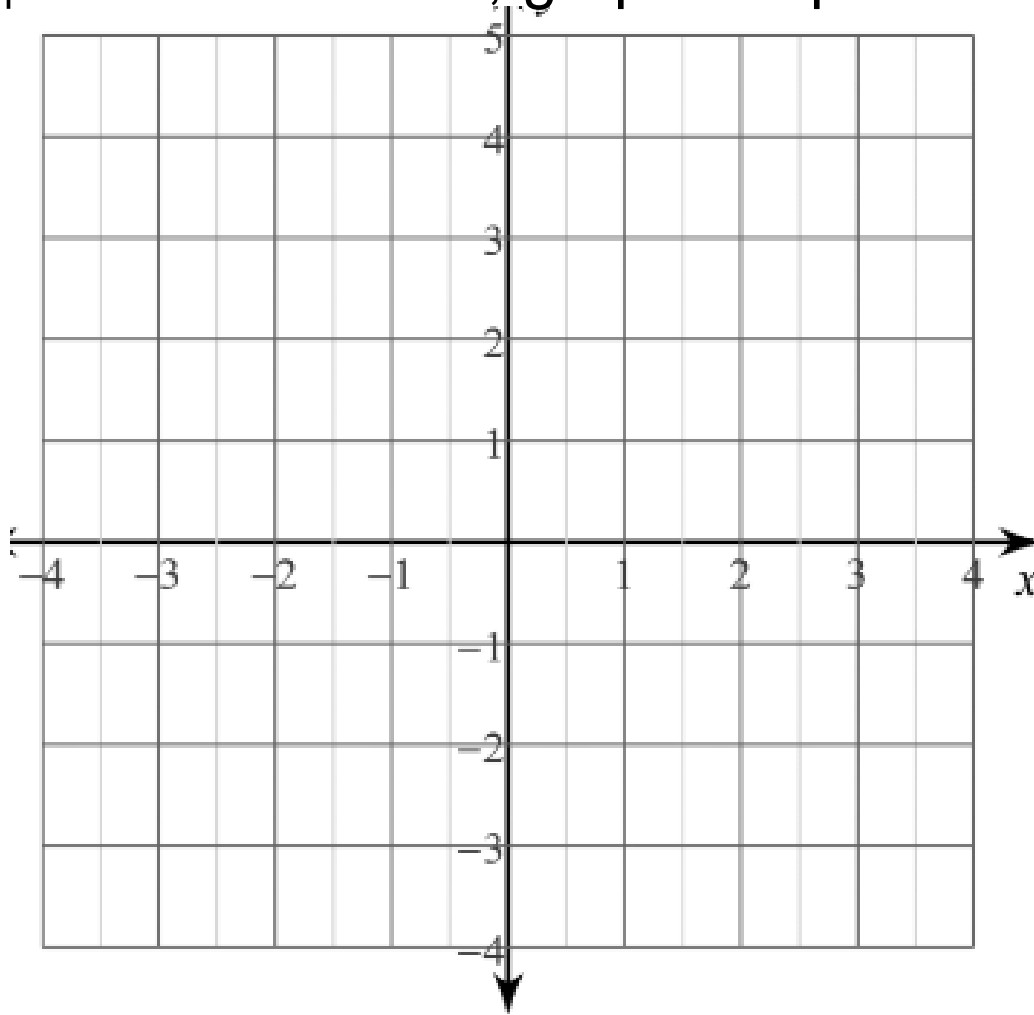
$$f(x) = |x|$$

x	y
-2	2
-1	1
0	0
1	1
2	2

$$g(x) = |x - 1|$$

x	g(x)
-2	
-1	
0	
1	
2	

Fill in the table, graph the points.



Replacing 'x' in the parent function with '(x - 1)' causes the graph to

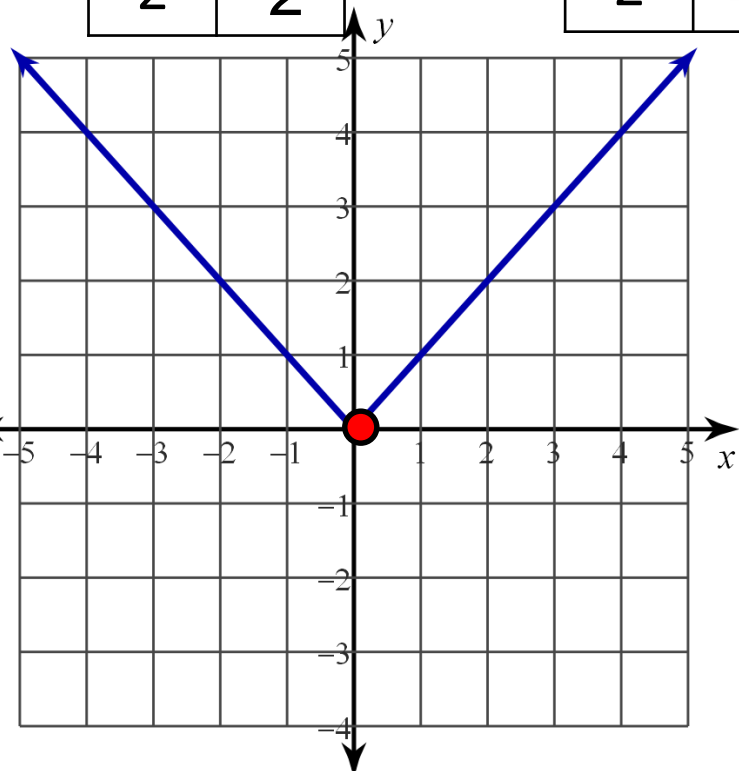
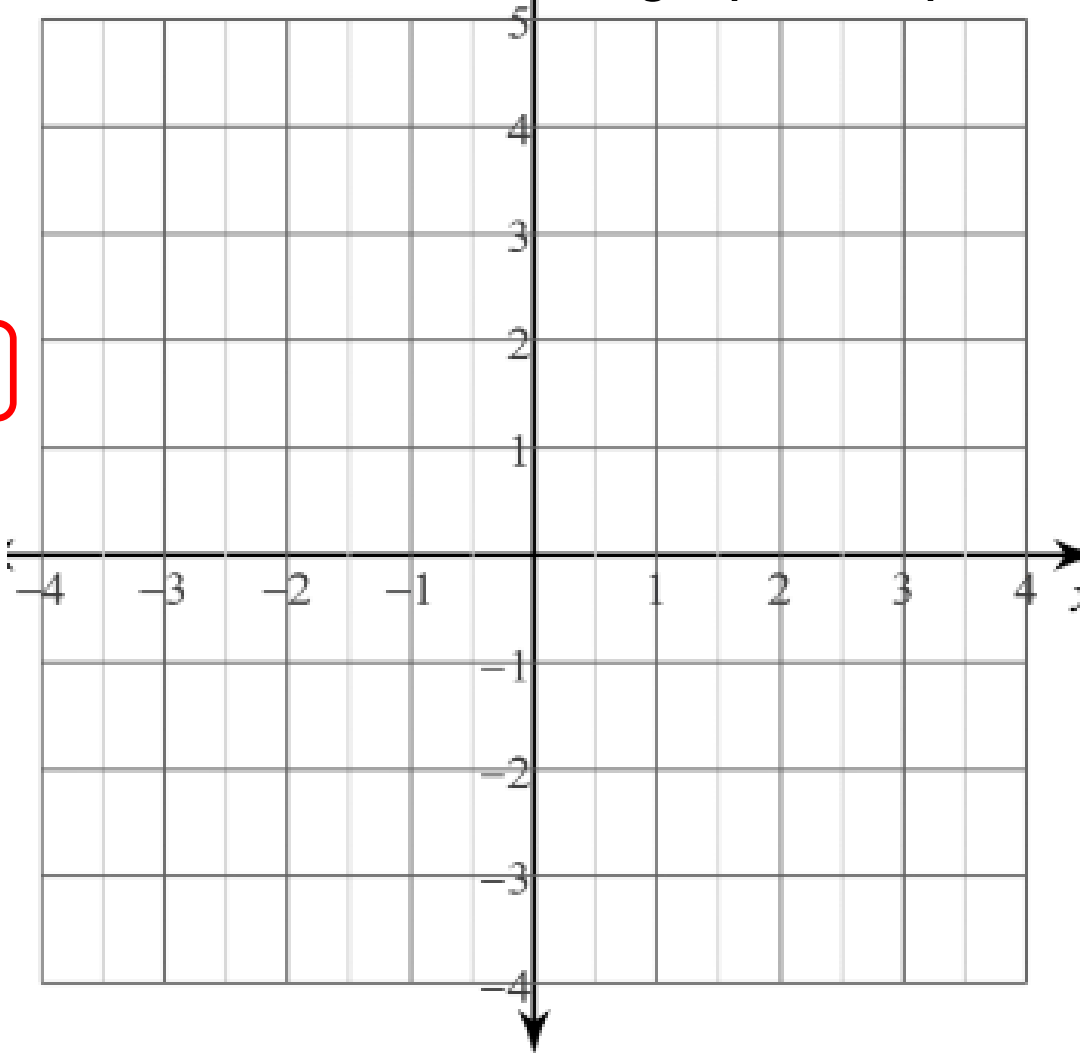
$$f(x) = |x|$$

$$g(x) = |x| + 2$$

Fill in the table, graph the points

x	y
-2	2
-1	1
0	0
1	1
2	2

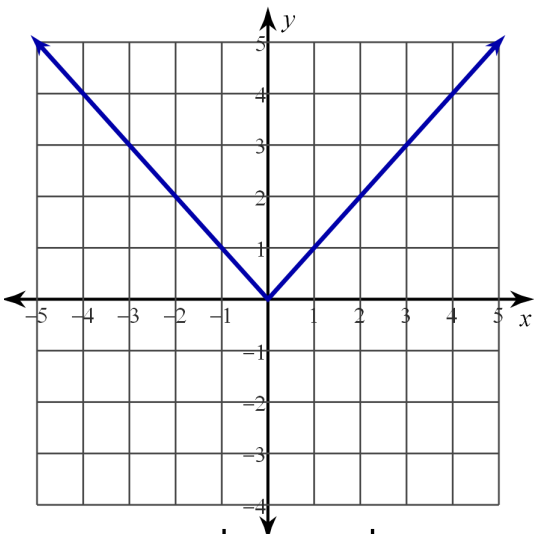
x	y
-2	4
-1	3
0	2
1	3
2	4



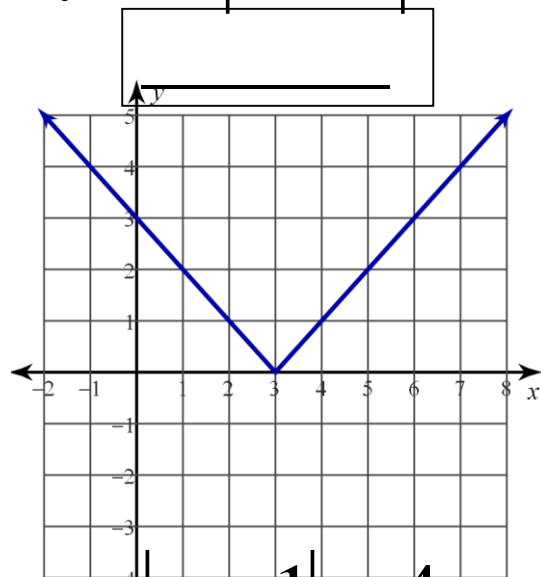
Adding 2 to the parent function causes the graph to _____

What is the transformation to the parent function?

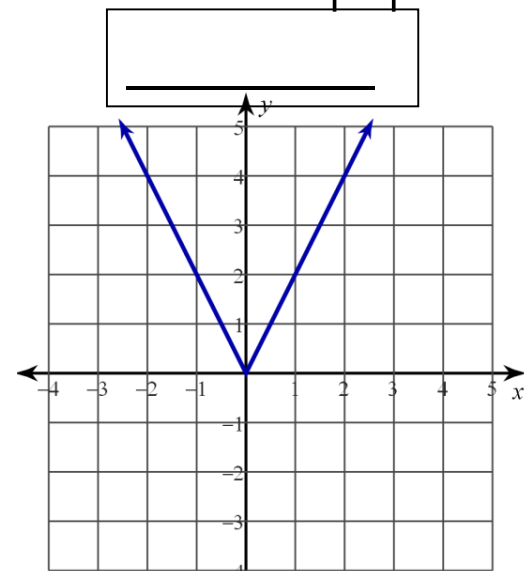
$$y = |x|$$



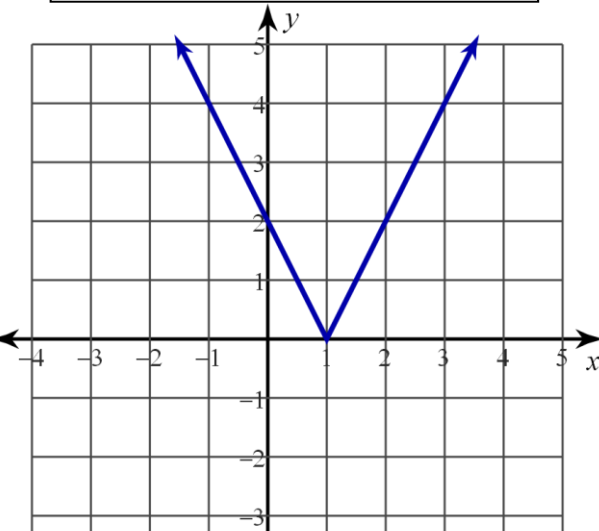
$$y = |x - 3|$$



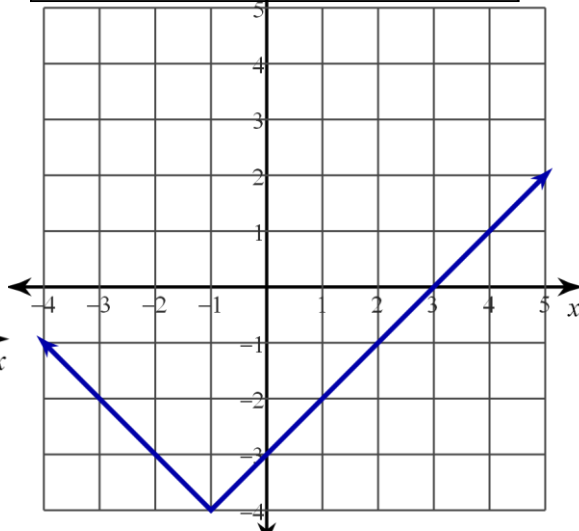
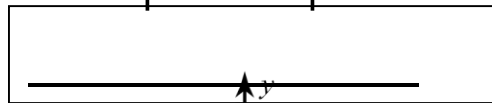
$$y = 2|x|$$



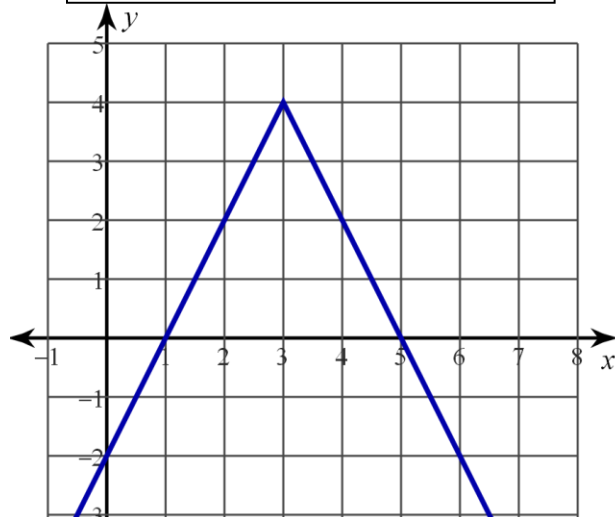
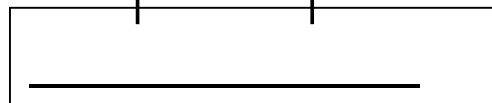
$$y = 2|x - 1|$$



$$y = |x + 1| - 4$$



$$y = -2|x - 3| + 4$$



$$y = x^2$$

$$y = (-1)a(x-h)^2 + k$$

$$y = |x|$$

$$y = (-1)a|x-h| + k$$

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

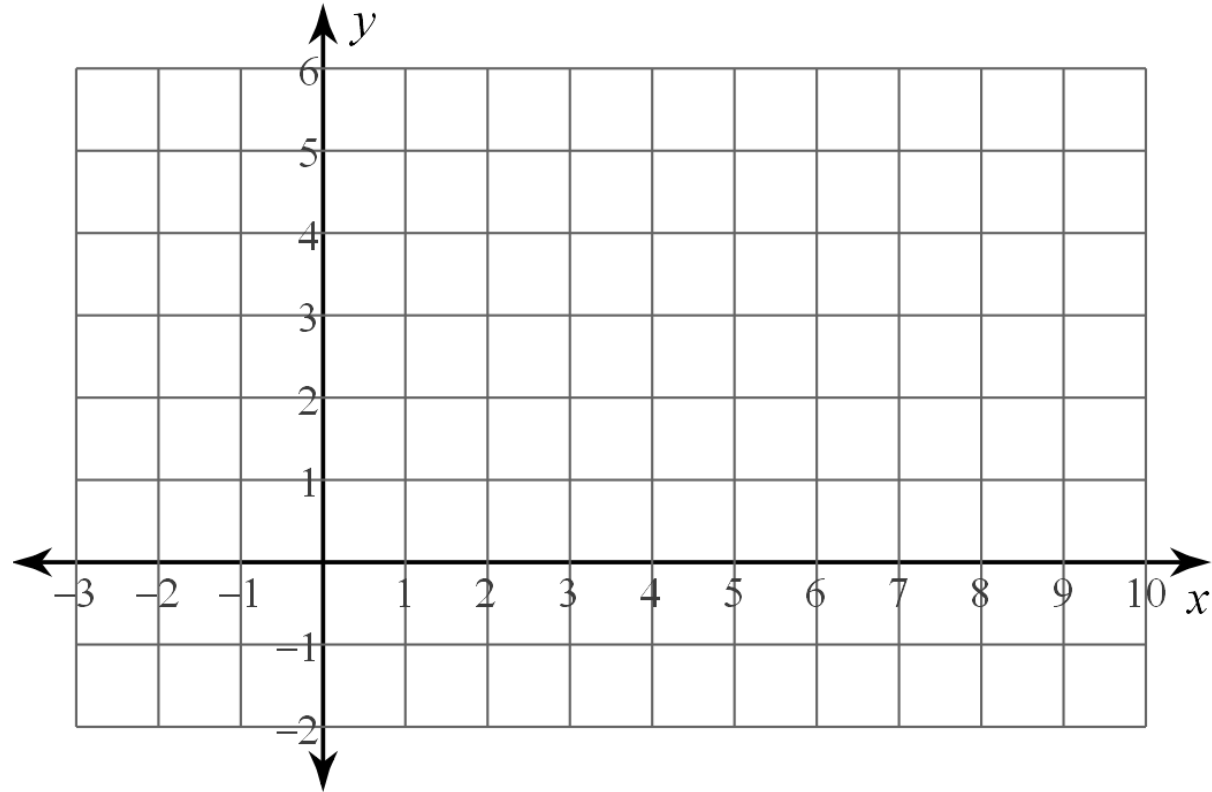
$$f(x) = -5|x-2| + 3$$

Square Root Function $f(x) = \sqrt{x}$

Fill in the table, then graph the x-y pairs

x	y
9	3
4	
1	
0	
-1	

$$y = \sqrt{x}$$
$$y = \sqrt{9} = 3$$

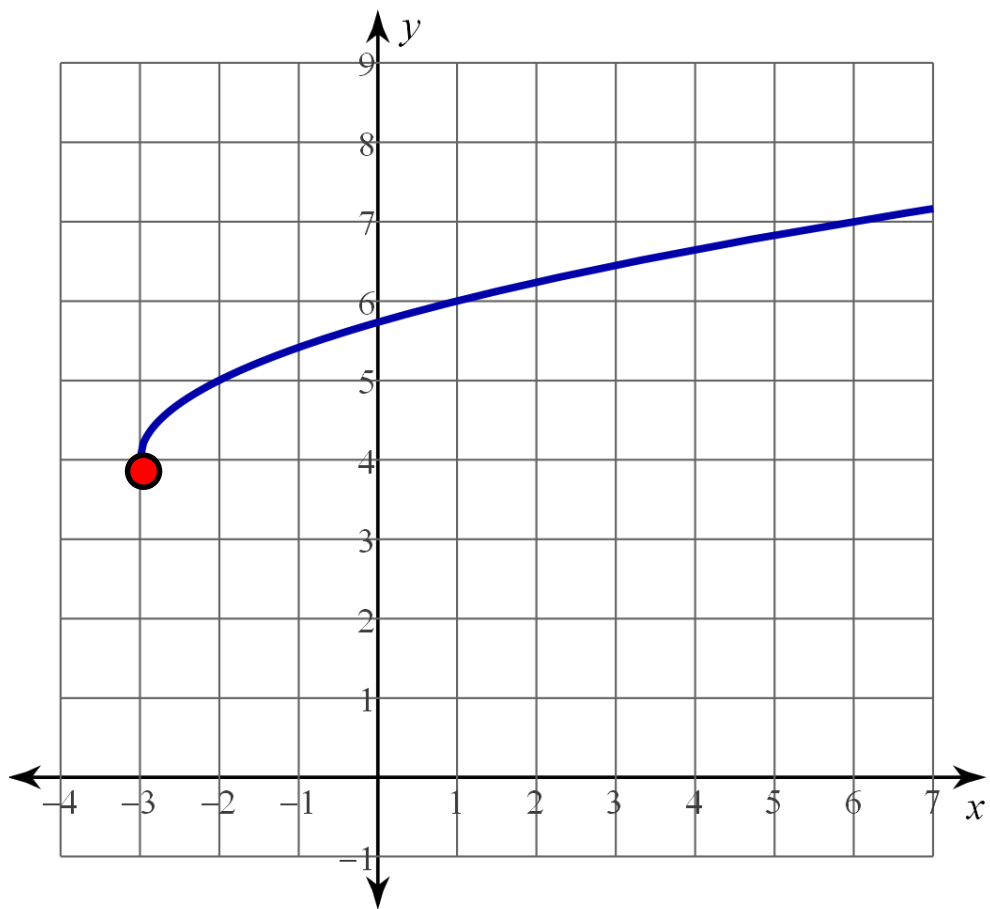


This is the first function, so far, that does NOT have all real numbers as the domain.

Describe the transformations to the parent function:

$$y = 4 + \sqrt{x + 3} \quad y = \sqrt{x + 3} + 4$$

Up 4, left 3



Domain?

$x =$ _____

Range?

$y =$ _____

End point?

(_____ , _____)

Describe the transformations to the parent function: $f(x) = \sqrt{x}$

Where is the endpoint of the graph?

$$g(x) = \sqrt{x-2} + 4$$

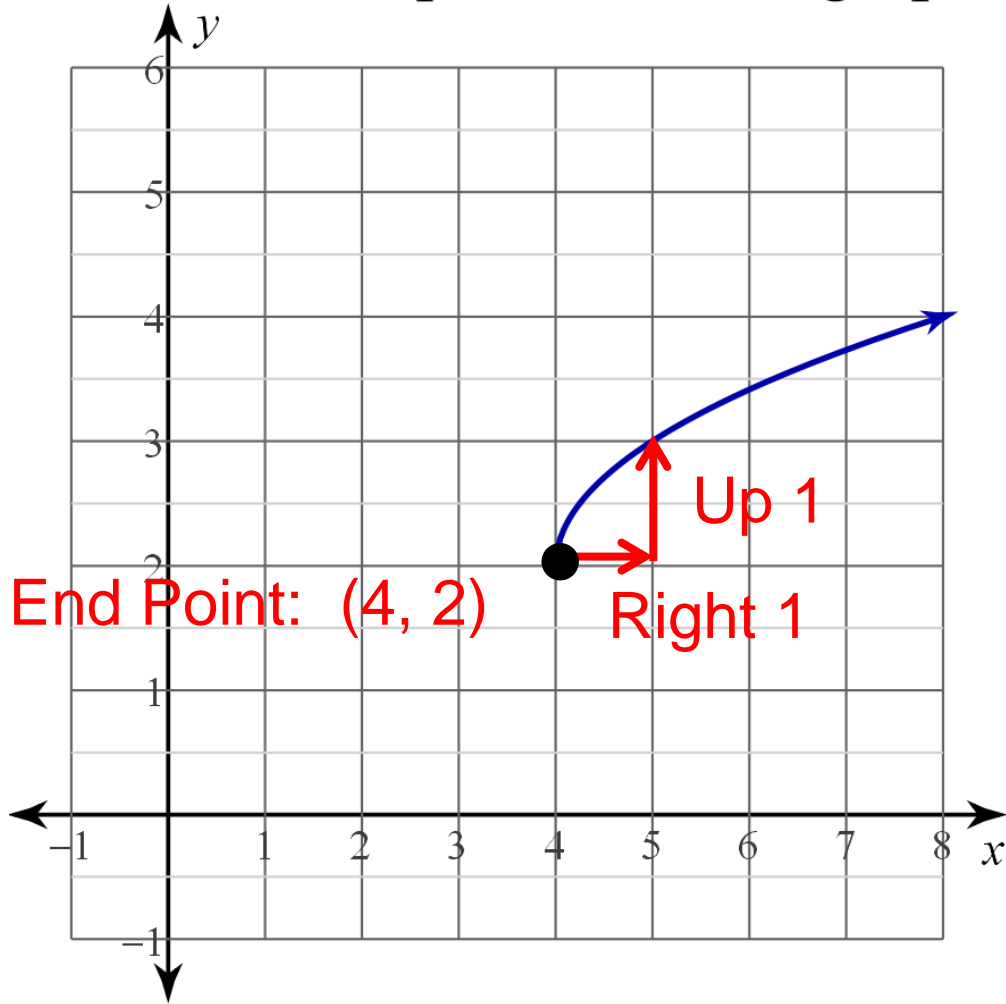
$$g(x) = 4 + \sqrt{x-2}$$

$$k(x) = -3 - 2\sqrt{x+1}$$

$$h(x) = -5 + 2\sqrt{x}$$

$$j(x) = 1 - 4\sqrt{x+2}$$

What is the equation of the graph?



End Point: (4, 2)

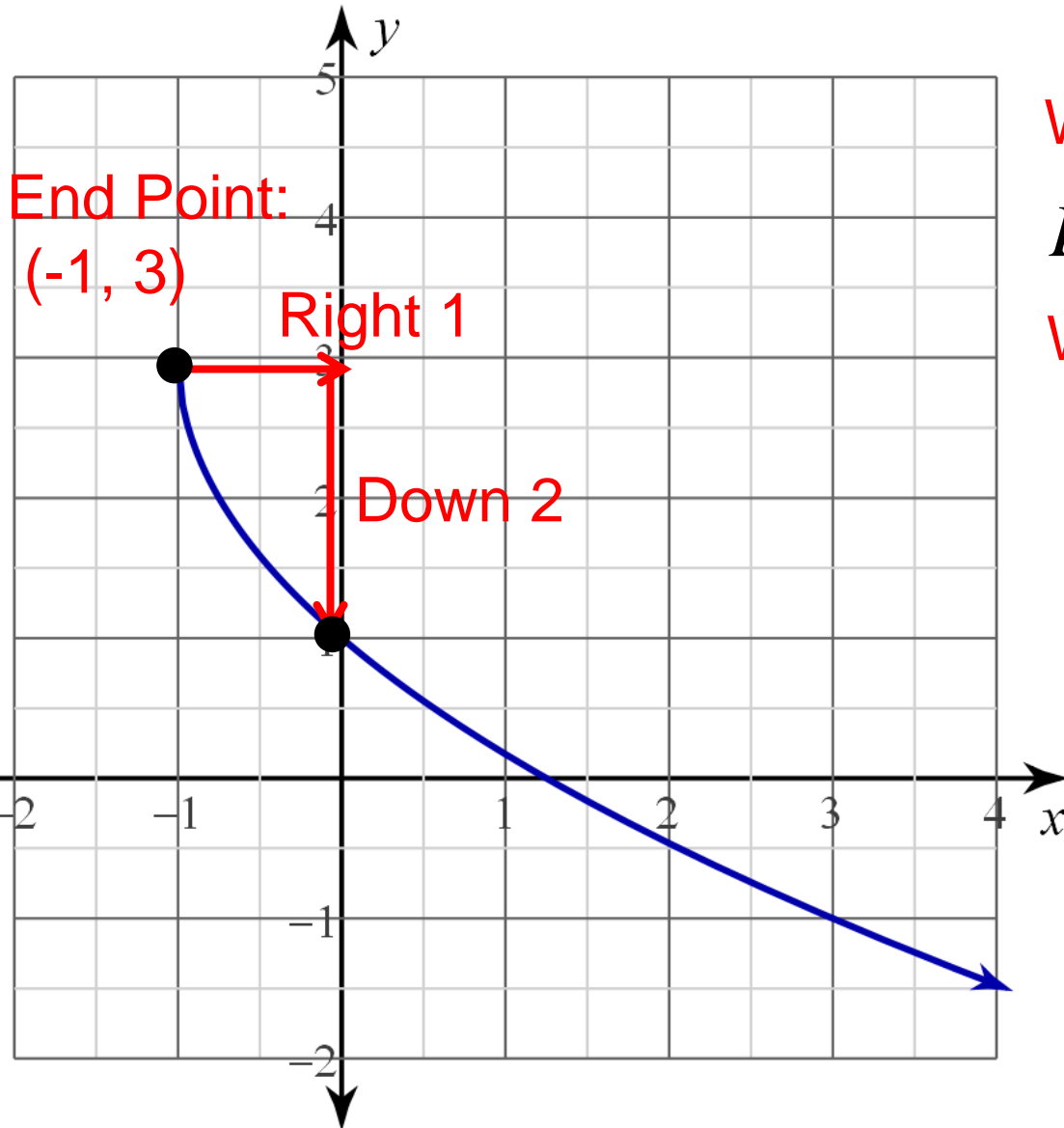
Right 1

Up 1

$y =$ _____

What is the equation of the graph?

$y =$ _____



What is the domain?

Domain : $x =$ _____

What is the Range?

range : $y =$ _____