

SM2 HANDOUT 4-1 (Functions, Relations and the Absolute Value Function)

Is it a function? _____

Is it a function?

Identify the Domain

1. (2, 4), (3, 5), (-4, 2)

2.

x	6	9	-2
y	4	7	3

3.

4.

What are 6 ways you can show a relation between input and output ?

Which of the following equations is “y a function of x”?

$x = \frac{1}{2}y - 3$ $y = 2x + 6$

$f(x) = |x|$ Absolute Value Function

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?"

The point (0, 0) is the vertex and there is a point in the position "right 1, up 1" (from the vertex).

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

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

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

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

$f(x) = |x|$ $g(x) = |x - 1|$ Fill in the table, graph the points.

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

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

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

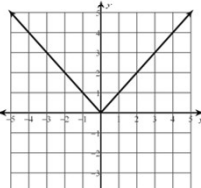
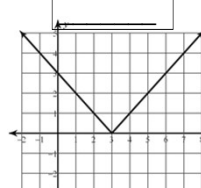
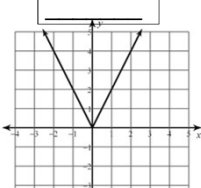
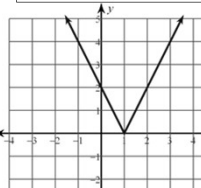
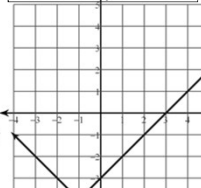
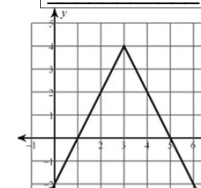
$f(x) = |x|$ $g(x) = |x| + 2$ Fill in the table, graph the points

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 $ 	$y = x + 1 - 4$ 	$y = -2 x - 3 + 4$ 

$y = |x|$

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

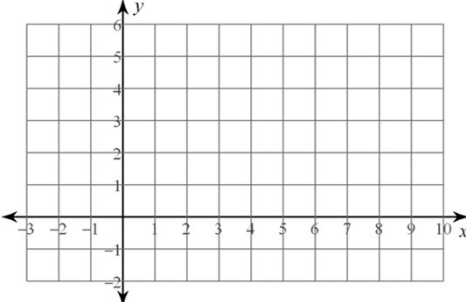
$y = 3(x + 5)^2 - 2$

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

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

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

x	y	$y = \sqrt{x}$
9	3	$y = \sqrt{9} = 3$
4		
1		
0		
-1		



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