

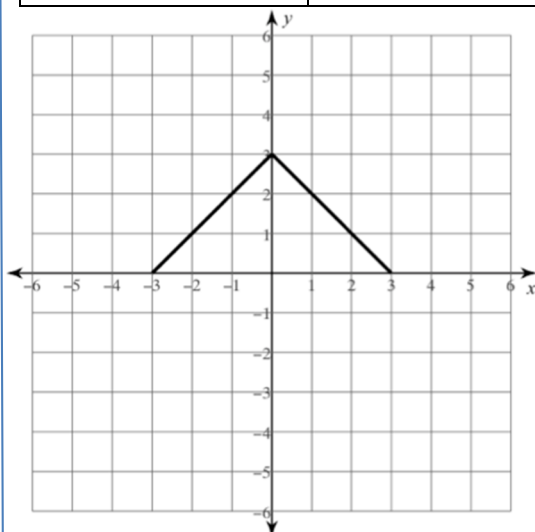
# 5.1 Transformations of Functions Pt 1

# NOTES

## ALGEBRA 2

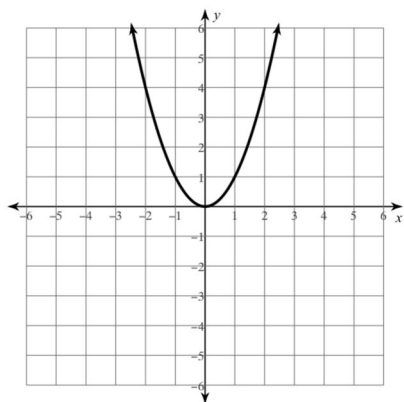
Write your questions here!

X	F(x)		
-3	0		
0	3		
3	0		



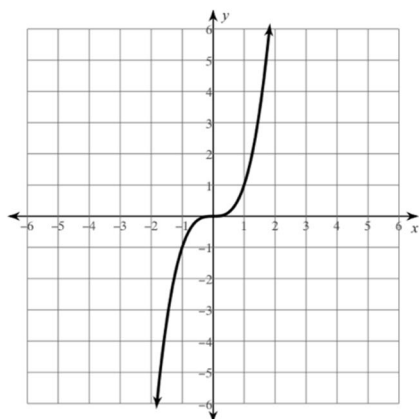
What would happen if we added  $k$  units to  $f(x)$ ?

FAMILIES OF FUNCTIONS  
And their Parent Functions



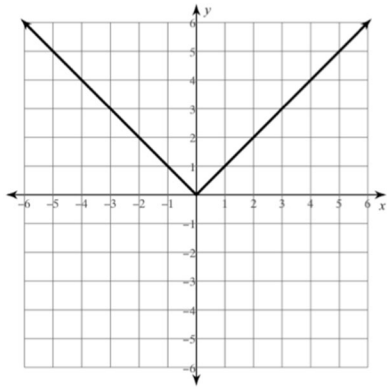
Quadratic Function

X	F(x)
-1	
0	
1	



Cubic Functions

X	F(x)
-1	
0	
1	



Absolute Value Function

X	F(x)
-1	
0	
1	

WHAT HAPPENS WHEN WE ADD A VALUE TO THE INSIDE? Write down your observations.

GENERALIZED TRANSLATIONS:

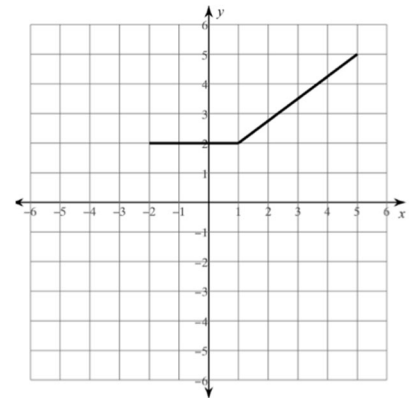
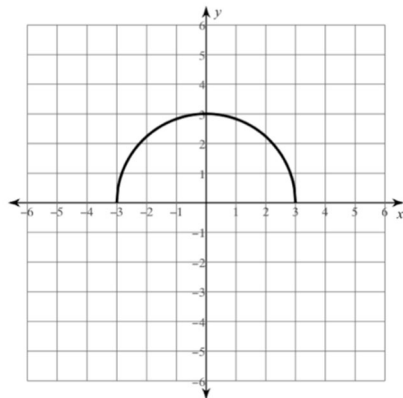
1)  $f(x) + k$ :

2)  $f(x - h)$ :

Directions: Write  $g(x)$  in terms of  $f(x)$  after performing the given transformation of the graph  $f(x)$ .

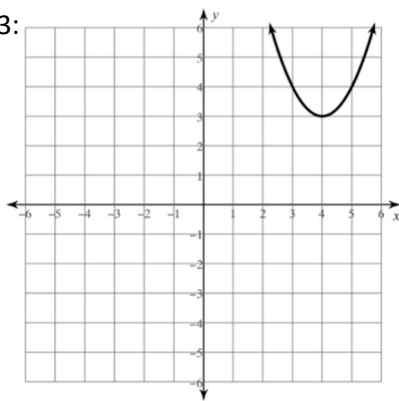
Ex 1:

Ex 2:

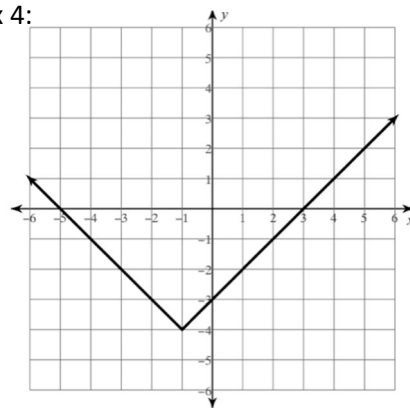


Directions: Write a function,  $g(x)$  that is a translation of the parent function.

Ex 3:



Ex 4:



**SUMMARY:**

Now, summarize your notes here!

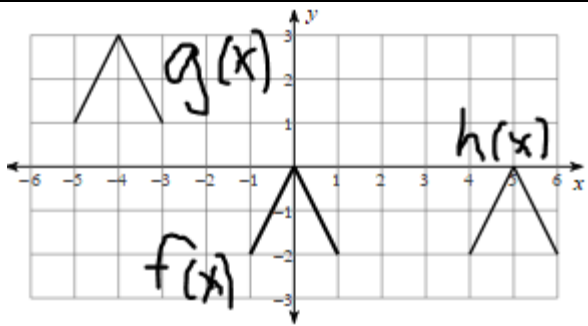
5.1 Transformations of Functions, Pt. 1

**PRACTICE**

Directions: a) Perform the translation on the given function (right on graph). B) Then, write  $g(x)$  in terms of  $f(x)$  after performing the given transformations.

	<p>1a) Translate the graph 4 units to the right and 3 units up.</p> <p>b) Write <math>g(x)</math> in terms of <math>f(x)</math>.</p>	<p>2a) Translate the graph 1 unit to the left.</p> <p>b) Write <math>g(x)</math> in terms of <math>f(x)</math>.</p>
	<p>3a) Translate the graph 5 units to the left and 2 units down.</p> <p>b) Write <math>g(x)</math> in terms of <math>f(x)</math>.</p>	<p>4a) Translate the graph 3 units down.</p> <p>b) Write <math>g(x)</math> in terms of <math>f(x)</math>.</p>

Directions: a) Describe the shift from  $f(x)$  to the given function. b) Write  $g(x)$  in terms of  $f(x)$  after performing the given transformations.

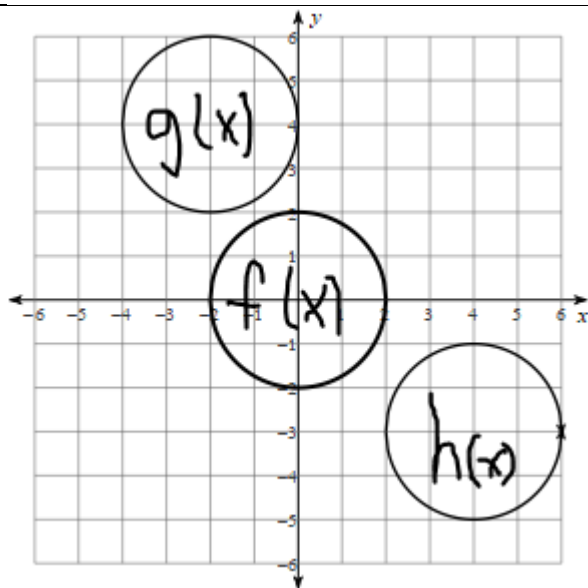


5a) Describe the shift from  $f(x)$  to  $g(x)$

b) Write  $g(x)$  in terms of  $f(x)$ .

6a) Describe the shift from  $f(x)$  to  $h(x)$

b) Write  $h(x)$  in terms of  $f(x)$ .



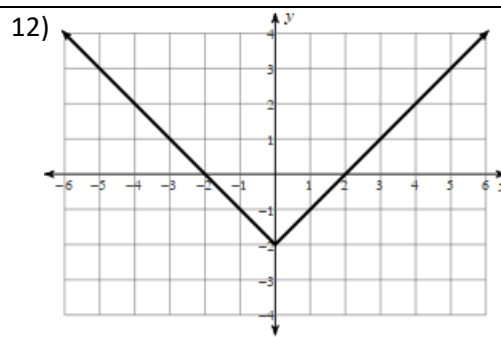
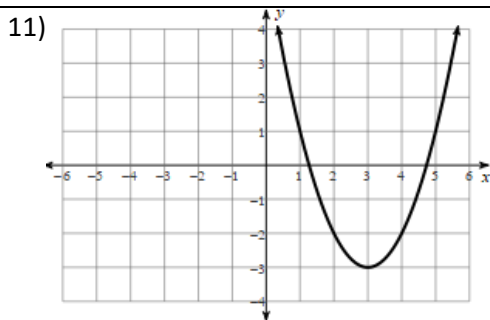
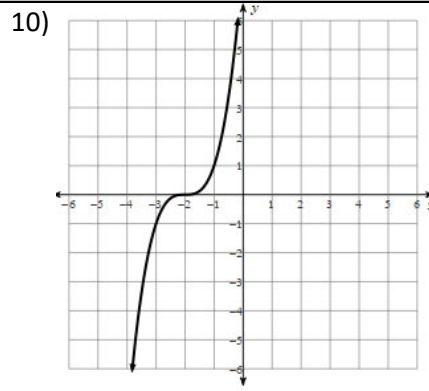
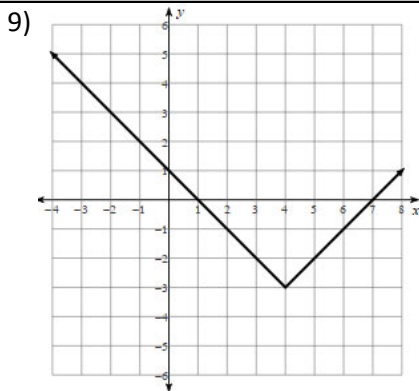
7a) Describe the shift from  $f(x)$  to  $g(x)$

b) Write  $g(x)$  in terms of  $f(x)$ .

8a) Describe the shift from  $f(x)$  to  $h(x)$

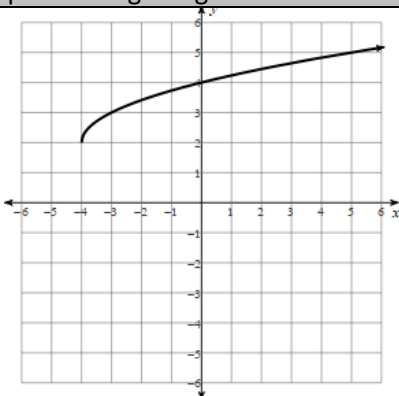
b) Write  $h(x)$  in terms of  $f(x)$ .

Directions: Write the equation of each graph.



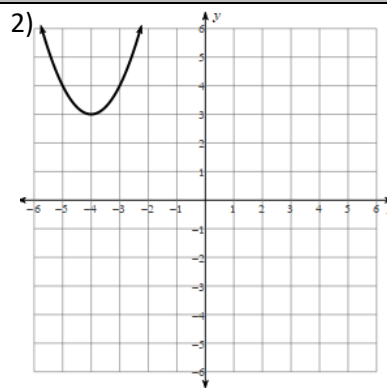
Directions: a) Perform the translation on the given function (right on graph). B) Then, write  $g(x)$  in terms of  $f(x)$  after performing the given transformations.

Directions: Write the equation of each graph.



1a) Translate the graph 6 units to the right and 4 units down.

b) Write  $g(x)$  in terms of  $f(x)$ .

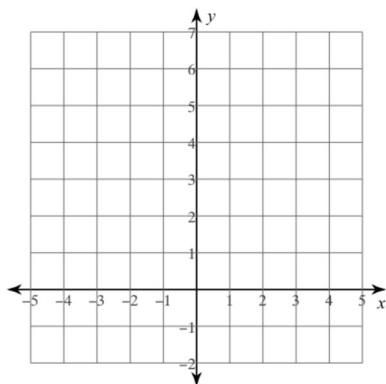


3) Complete the given table for each function, then graph each functions on the same graph.

A)

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

X	F(x)
-2	
-1	
0	
1	
2	



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

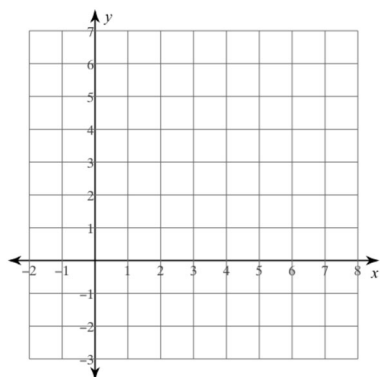
X	g(x)
-2	
-1	
0	
1	
2	

Describe the transformation from  $f(x)$  to  $g(x)$ . Justify your answer describing the changes on the equation, graph and table of values.

B)

$$h(x) = |x - 3| - 2$$

X	j(x)
1	
2	
3	
4	
5	



$$j(x) = 2|x - 3| - 2$$

X	j(x)
1	
2	
3	
4	
5	

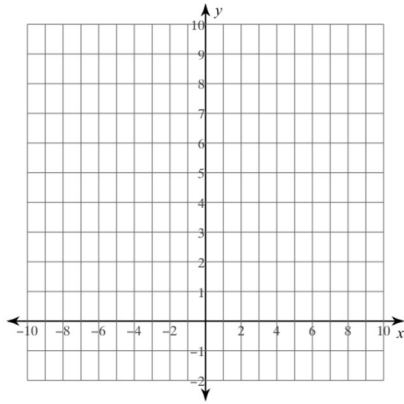
Describe the transformation from  $h(x)$  to  $j(x)$ . Justify your answer describing the changes on the equation, graph and table of values.

4) Complete the given table for each function, then graph each functions on the same graph.

A)

$$m(x) = |x + 3| + 4$$

X	m(x)
-5	
-4	
-3	
-2	
-1	



$$n(x) = -|x + 3| + 4$$

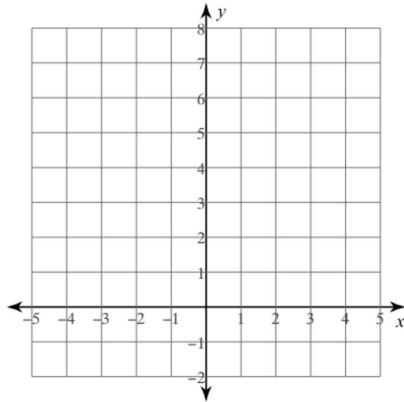
X	n(x)
-5	
-4	
-3	
-2	
-1	

Describe the transformation from  $m(x)$  to  $n(x)$ . Justify your answer describing the changes on the equation, graph and table of values.

B)

$$p(x) = (x - 1)^2 + 3$$

X	p(x)
-1	
0	
1	
2	
3	



$$q(x) = -(x - 1)^2 + 3$$

X	q(x)
-1	
0	
1	
2	
3	

Describe the transformation from  $p(x)$  to  $q(x)$ . Justify your answer describing the changes on the equation, graph and table of values.

### EXIT TICKET –

Look at #3. Describe what multiplying a function by 2 does to the function. Use complete sentences.

Look at #4. Describe what multiplying a function by a negative does to the function. Use complete sentences.

Describe the transformation from the parent function to  $g(x) = -(x - 4)^2 + 5$