

Name \_\_\_\_\_

Date \_\_\_\_\_

Negative Reflects x

## Transformations of Graphs

Describe the transformations that are applied.

$$f(x) = a f(x-h) + k$$

Function	a	h	k
$f(x) + 5$	none	none	+5 = up 5
$3f(x-1) + 6$			
$-f(x+9) - 2$	- = Reflects on x-axis	+9 = left 9	-2 = down 2
$\frac{1}{2}f(x-10)$			
$-5f(x) + 2$	- = Reflects on x-axis 5 = Vertical stretch	none	+2 = up 2

For 1-5, suppose that  $f(x) = x^2$  and  $g(x) = 2x$ . Match the function notation to the correct function.

1.  $f(x+2)$  left 2
  2.  $g(x) + 2$
  3.  $2f(x)$  vertical stretch
  4.  $-g(x)$
  5.  $f(x) + 2$  up 2
- A.  $-2x$
  - B.  $(x+2)^2$  left 2
  - C.  $2x + 2$
  - D.  $x^2 + 2$  up 2
  - E.  $2x^2$  vertical stretch

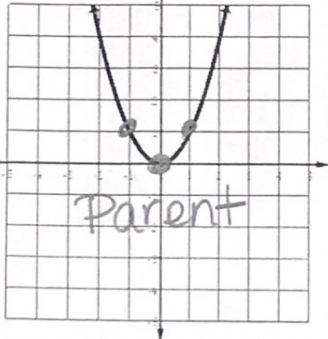
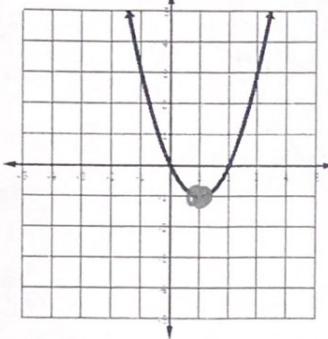
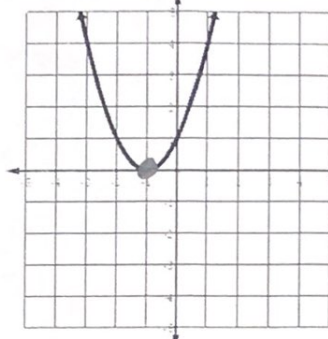
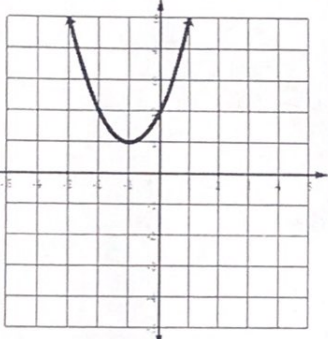
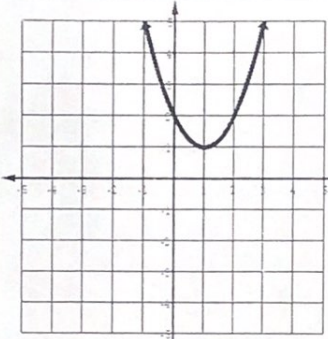
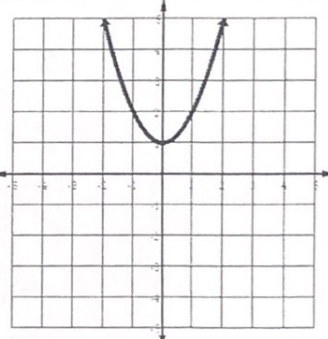
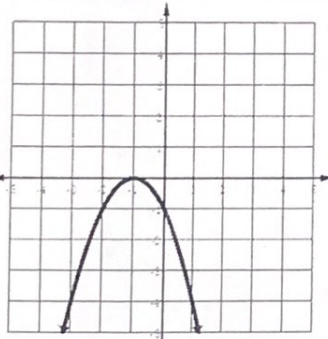
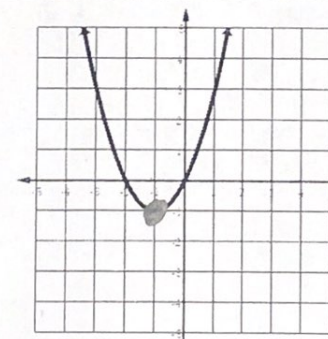
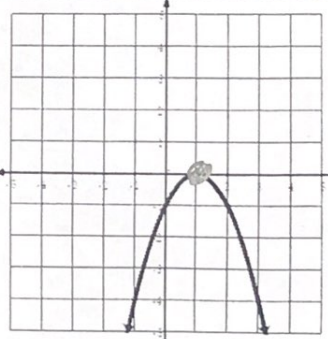
Write a description of the transformations on the functions above.

1.  $f(x) = x^2$   $f(x+2)$  Parabola shifted left 2
2. \_\_\_\_\_
3.  $f(x) = x^2$   $2f(x)$  Parabola vertically stretched 2
4. \_\_\_\_\_
5.  $f(x) = x^2$   $f(x) + 2$  Parabola shifted up 2

Match the numbered functions with their lettered graphs.

1. $x^2$	<b>A</b>	2. $x^2 + 1$		3. $(x+1)^2$ left 1	<b>C</b>
4. $(x+1)^2 + 1$		5. $(x+1)^2 - 1$ left 1 down 1	<b>H</b>	6. $(x-1)^2 + 1$	
7. $(x-1)^2 - 1$ right 1 down 1	<b>B</b>	8. $-(x+1)^2$		9. $-(x-1)^2$ reflect x right 1	<b>I</b>

<b>A.</b> 	<b>B.</b> 	<b>C.</b> 
<b>D.</b> 	<b>E.</b> 	<b>F.</b> 
<b>G.</b> 	<b>H.</b> 	<b>I.</b> 

Review: Select three of the ordered pairs below that could be added to the set so that  $f$  remains a function.

x	f(x)
-5	3
0	6
3	-2
4	0

A. (-3, -2)

B. (4, 2)

C. (0, -1)

D. (1, 6)

E. (2, 3)

F. (-5, 9)

~~can't repeat x~~

~~can't repeat x~~

~~can't repeat x~~