

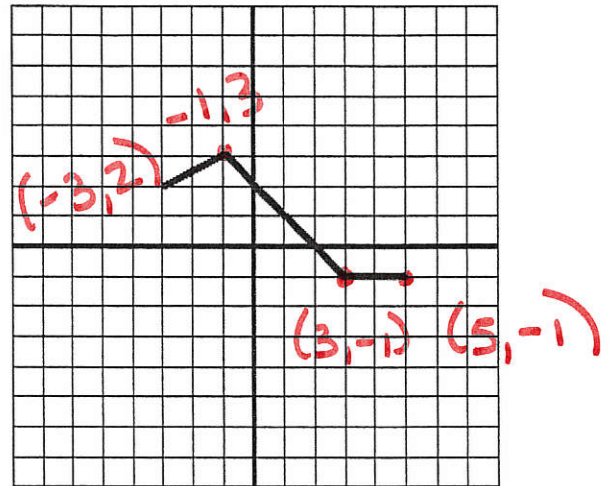
Double Transformation Homework

Name: Key

1. Let $f(x)$ be the piecewise-linear function shown on the grid at the right. The domain of this function is $-3 \leq x \leq 5$.

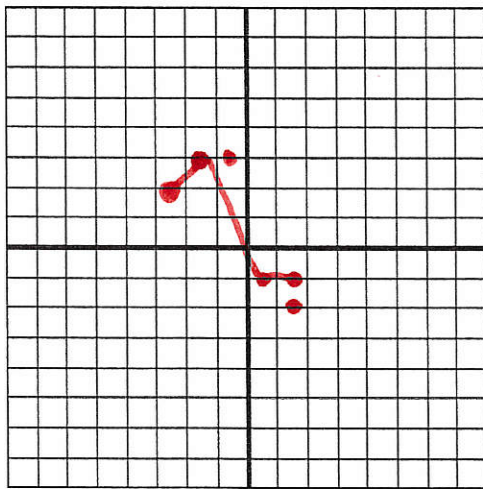
Draw each of the following graphs.

Hint: The original graph has four points that define the ends of its linear pieces. Find what happens to those four points for each transformation, then you can just connect-the-dots to draw the rest.



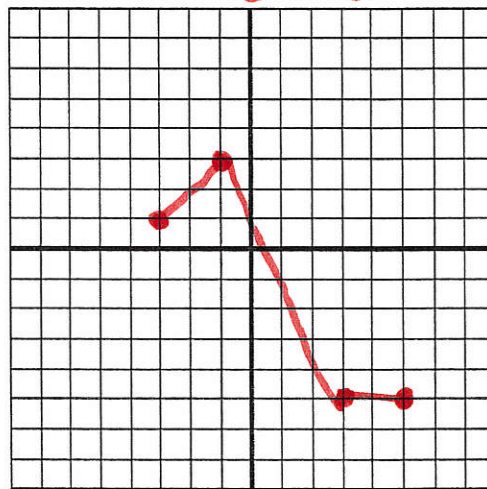
$b = 2$
 $c = 1$
 $(\frac{x}{2} - 1, y)$

a. $f(2(x - 1))$

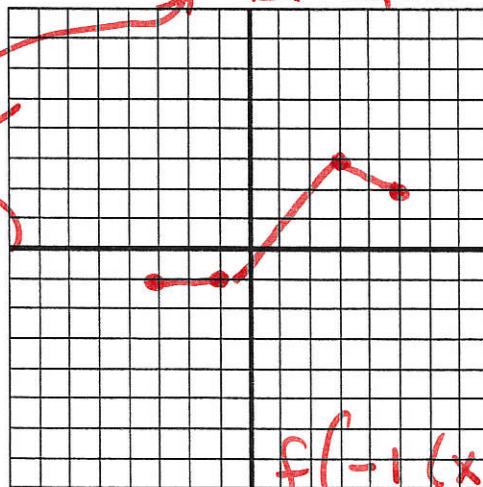


b. $2f(x) - 3$

$a = 2$
 $d = -3$
 $(x, 2y - 3)$

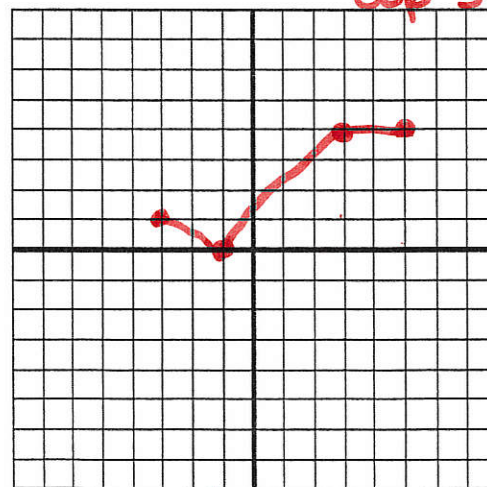


c. $f((-x) + 2)$



d. $-f(x) + 3$

reflect over x
up 3



$(x, -y + 3)$

-3	2	→	-3, 1
-1	3	→	-1, 0
3	-1	→	3, 4
5	-1	→	5, 4

reflect over y,
 reflect 2
 inside the f()

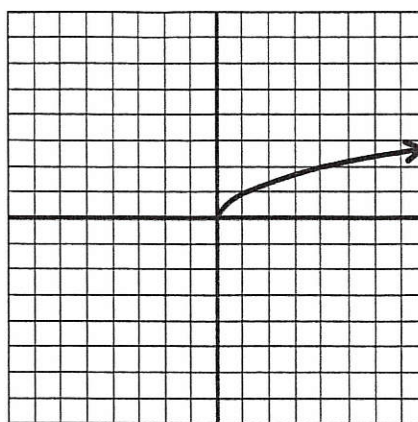
$f(-1(x - 2))$

$(-x + 2, y)$

reflect over y, reflect 2

x	y	
-3	2	→ 5, 2
-1	3	→ 3, 3
3	-1	→ -1, -1
5	-1	→ -3, -1

2. Write the equation of the new function (based on the function definition), and then draw the graph USING TRANSFORMATIONS – NOT your calculator. For this page, $f(x) = \sqrt{x}$. (The graph of original function is shown at the right).



x	y
0	0
1	1
4	2

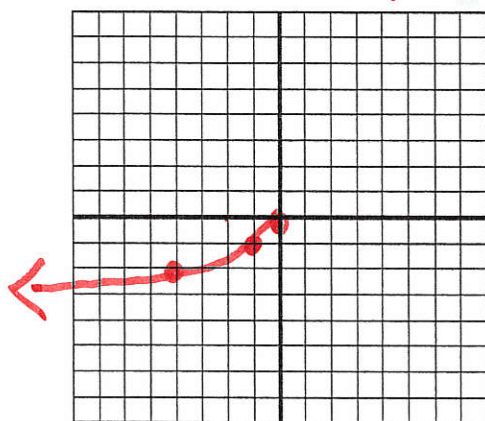
Be careful of the order in which you apply the transformations!

reflect over y-axis
reflect over x-axis
x

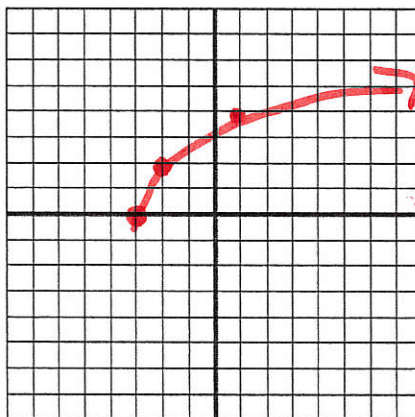
Inside out
 $(-x, -y)$

a. $-f(-x) =$

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



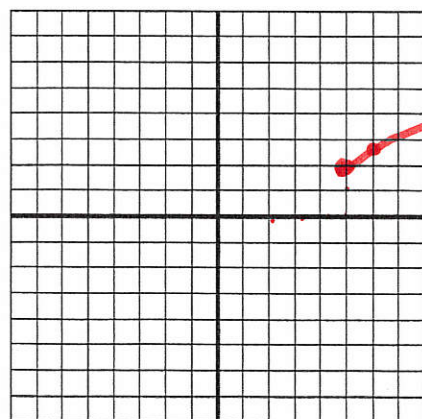
b. $2f(x+3) =$ $(x-3, 2y)$



x	y
-3	0
-2	2
-1	4

c. $\frac{1}{2}f(x-5) + 2$

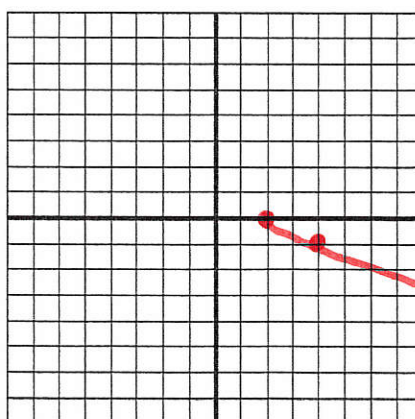
$(x+5, \frac{1}{2}y+2)$



x	y
5	2
6	2.5
9	3

d. $-f(\frac{1}{2}(x-2)) =$

$(\frac{x}{2}, -y)$
 $(2x+2, -y)$



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