

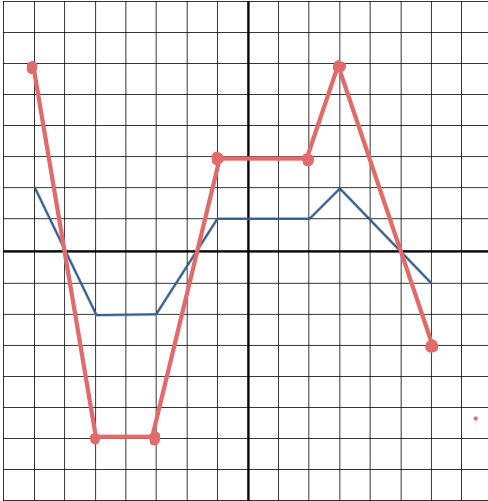
NAME: \_\_\_\_\_ PERIOD: \_\_\_\_\_ DATE: \_\_\_\_\_

# Homework Problem Set

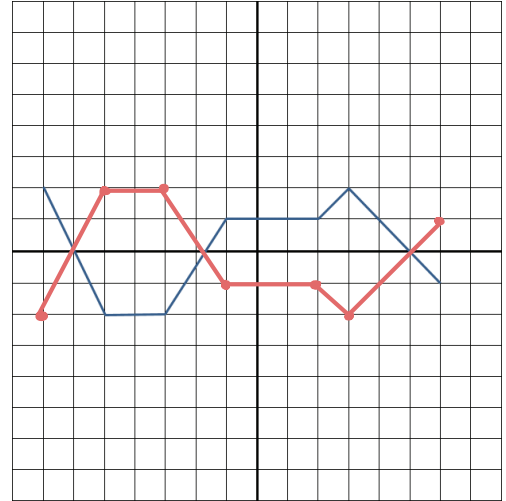
VERTICAL STRETCH  
(multiply y-value  
by 3)

REFLECT OVER X-AXIS

1. Graph the transformation  $g(x) = 3f(x)$ .

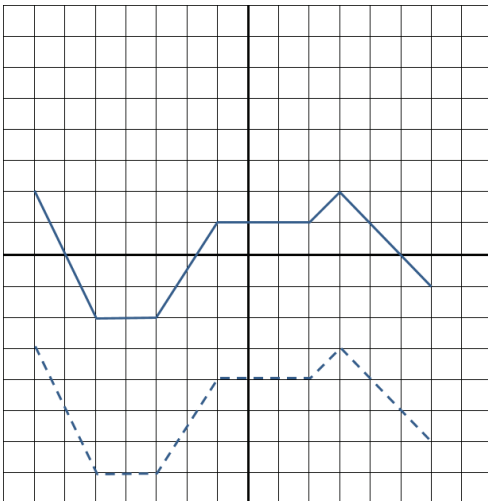


2. Graph the transformation  $h(x) = -f(x)$ .

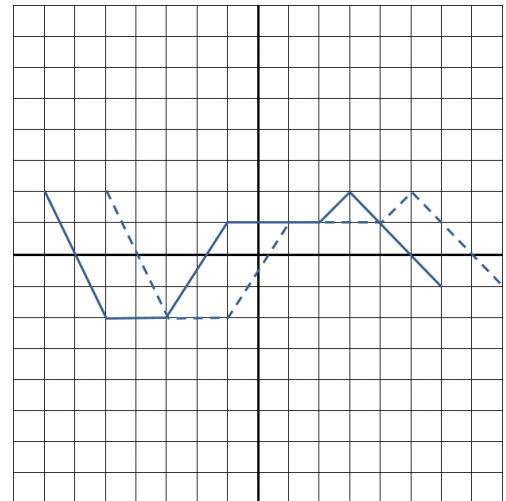


Write an equation to describe the transformations in the graph below. The original function is solid.

3.  $f(x) - 5$



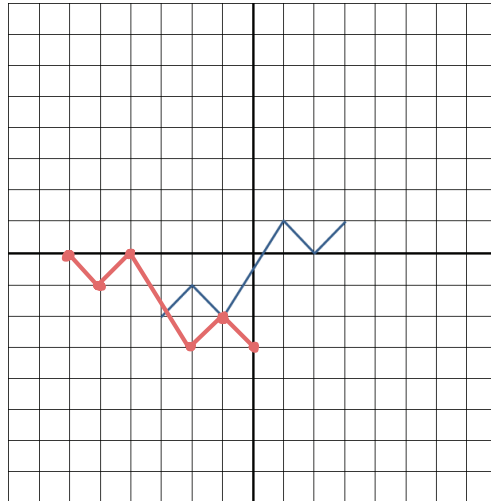
4.  $f(x - 2)$



Complete each series of transformations in the order given.

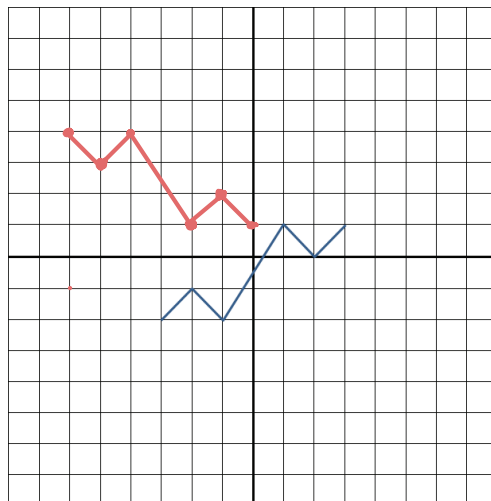
5.

- translate up 2
- reflect over the x-axis
- translate left 3



6.

- reflect over the x-axis
- translate up 2
- translate left 3



7. Identify any differences in the two graphs from Problems 5 and 6.

Even though both problems have the same transformations, they are performed in a different order.

THE ORDER OF TRANSFORMATIONS MATTERS!

Determine the missing transformation, equation, or coordinates for each problem. One example has been done for you.

	Transformation	Equation	Coordinates
Example	Shift right 5	$y = f(x - 5)$	$(x + 5, y)$
8.	Shift left 5	$y = f(x + 5)$	$(x - 5, y)$
9.	Reflect over x-axis	$y = -f(x)$	$(x, -y)$
10.	Translate vertically up 3	$y = f(x) + 3$	$(x, y + 3)$
11.	Shift down 6	$y = f(x) - 6$	$(x, y - 6)$
12.	Reflect over y-axis	$y = f(-x)$	$(-x, y)$
13.	Translate horizontally left 2	$y = f(x + 2)$	$(x - 2, y)$
14.	Stretch vertically by a factor of 3	$y = 3f(x)$	$(x, 3y)$
15.	Shrink vertically by a factor of $\frac{1}{5}$	$y = \frac{1}{5}f(x)$	$(x, \frac{1}{5}y)$