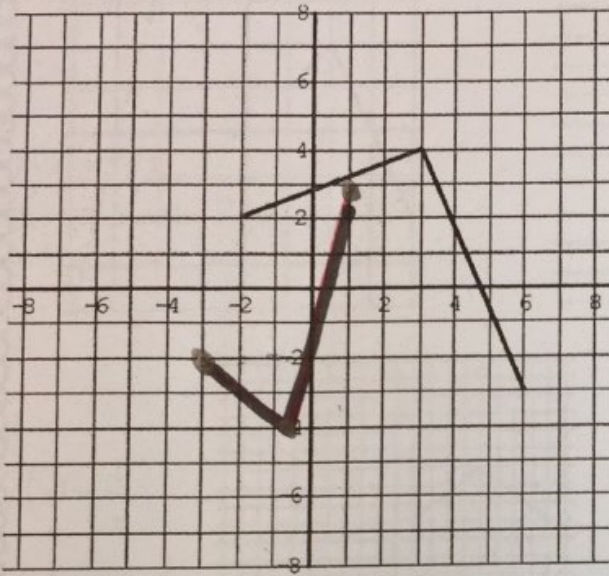


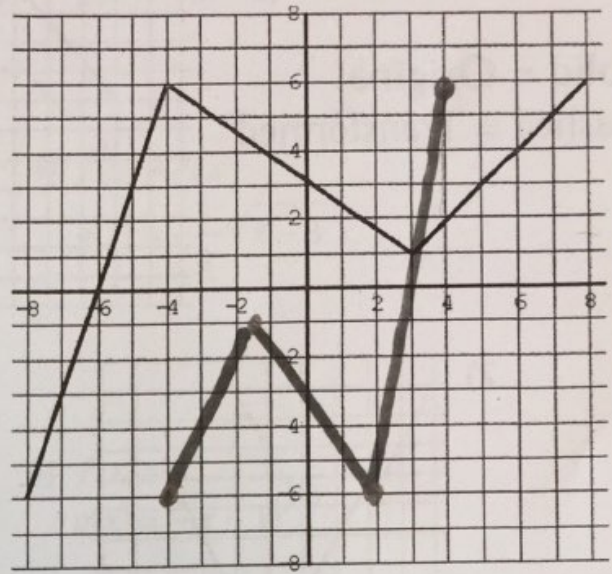
Part II: Combining All Transformations

Questions: For each of the graphs, apply the transformation:

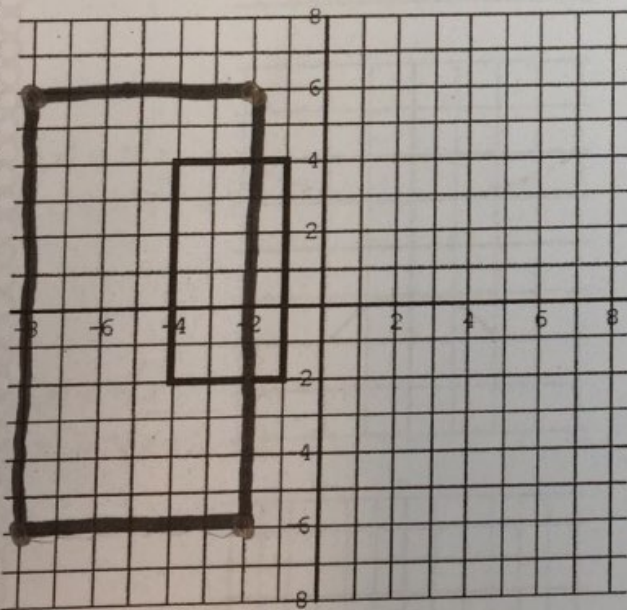
1) $y = -f(2x + 4)$



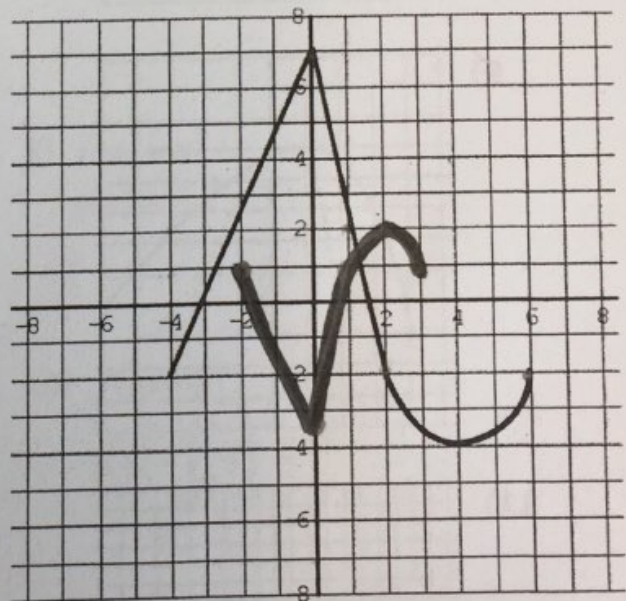
2) $y = -\frac{1}{2}f(-2x)$



3) $y = 2f\left(\frac{1}{2}x\right) - 2$



4) $y = -\frac{1}{2}f(2x)$



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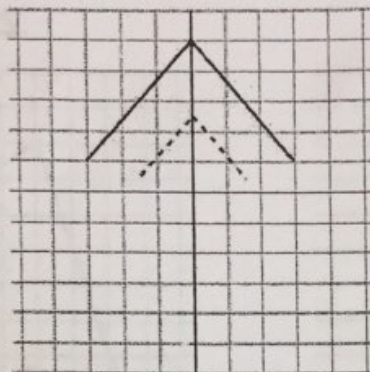
Part II: Combining All Transformations

Questions: For each of the following graphs, write the equation of the transformation:

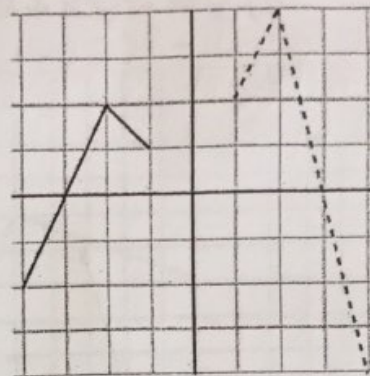
Solid = Original

Dashed = Transformed

5)

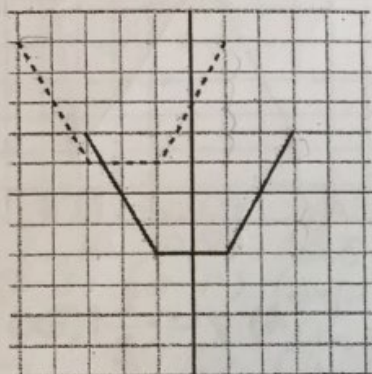


6)

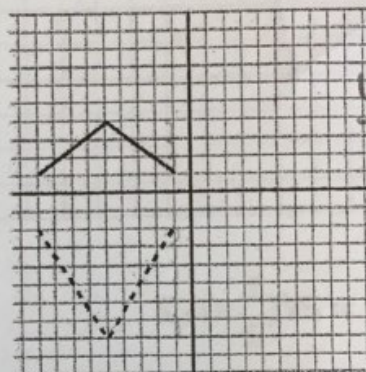


$$y = f[(x+2)] + 3$$

7)

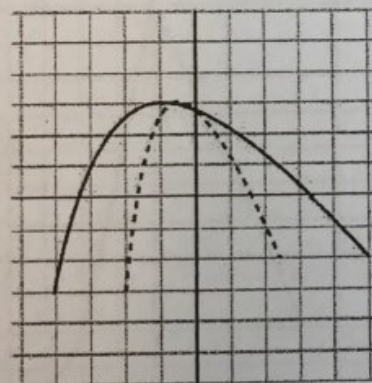


8)

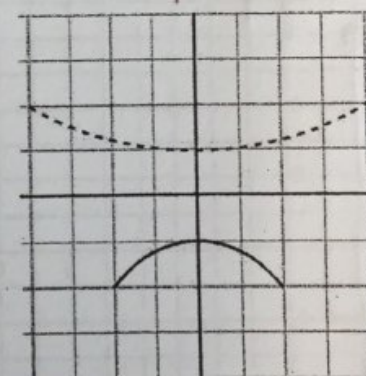


$$y = -2f(x)$$

9)

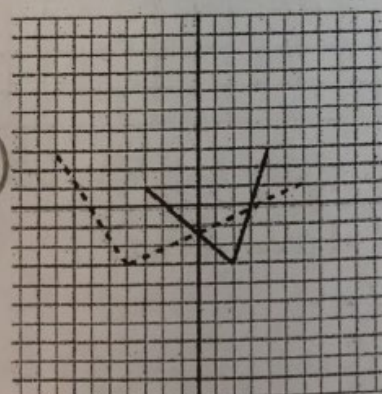


10)

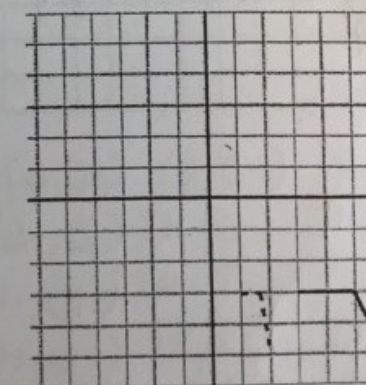


$$y = f\left(\frac{1}{2}x\right)$$

11)



12)



$$y = f(3x)$$

$$y = f(2x)$$

$$y = f\left(-\frac{1}{2}x\right)$$

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Assignment

Date _____ Period _____

Describe the transformations necessary to transform the graph of $f(x)$ into that of $g(x)$.

1) $f(x) = x^3$
 $g(x) = (3x)^3 + 1$
 horz Comp by $\frac{1}{3}$
 up 1

2) $f(x) = x^2$
 $g(x) = -(x-2)^2$
 x axis ref
 Right 2

3) $f(x) = \sqrt{x}$
 $g(x) = \sqrt{-x} - 2$
 y axis ref.
 down 2

4) $f(x) = \sqrt{x}$
 $g(x) = -\frac{1}{2}\sqrt{x-3}$
 x axis ref
 V. Compression
 right 3

5) $f(x) = \frac{1}{x}$
 $g(x) = -\frac{3}{x-2} + 2$
 x axis ref
 V. Stretch
 right 2 up 1

6) $f(x) = x^3$
 $g(x) = -(x-1)^3$
 x axis ref
 right 1

7) $f(x) = \sqrt{x}$
 $g(x) = -\sqrt{x} + 2$
 x axis ref
 up 2

8) $f(x) = x^3$
 $g(x) = -x^3 - 3$
 x axis ref.
 down 3

9) $f(x) = \sqrt{x}$
 $g(x) = \sqrt{x+2} + 1$
 left 2
 up 1

10) $f(x) = x^2$
 $g(x) = \left(\frac{1}{3}x\right)^2 - 1$
 horz Comp
 down 1

Transform the given function $f(x)$ as described and write the resulting function as an equation.

11) $f(x) = |x|$
 compress horizontally by a factor of 3
 reflect across the x-axis

$f(x) = -|3x|$

12) $f(x) = \sqrt{x}$
 expand vertically by a factor of 2
 translate down 3 units

$f(x) = 2\sqrt{x} - 3$