Name:_____ Date:_____

Math 10/11 Enriched Section 5.5 Combined Transformations

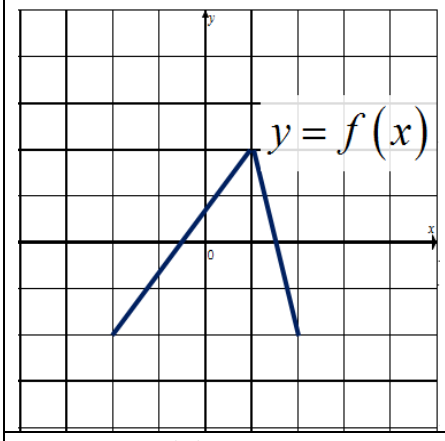
1. The point (6,12) is on the graph of $y = f(x)$. What point must be on the graph of each of the following:

a) $y = 3f(x-2)+4$	b) $y-5 = f(3x-6)$
c) $y = \frac{-1}{4} f(3-x)+7$	d) $y = \frac{1}{f(x+3)}+8$
e) $y = \left\| \frac{1}{f(2x)} \right\| +7$	f) $y = f^{-1}(x)$
g) $y = f(\|x\|)$	h) $2x = f(3y)$

2. The graph of $y = (x-2)^2 - 1$ represents $y = f(x)$. What are the coordinates of the point(s) that would be invariant for the following transformations?

a) $y = f(-x)$	b) $y = -f(x)$
c) $x = f(y)$	d) $y = f(4x)$
e) $y = \frac{1}{f(x)}$	f) $y = \frac{1}{2} f(x)$

3. Given the graph of $y = f(x)$, draw the graph of the following functions:



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

b) $y = f(2x-1)$

c) $y = 0.5f(x)+1$

d) $x = f(2x)$

f) $y = f(|x|)$

g) $y = 2f(2x-1)-1$

h) $y = f(|2x|)$

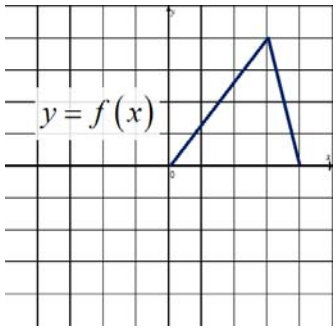
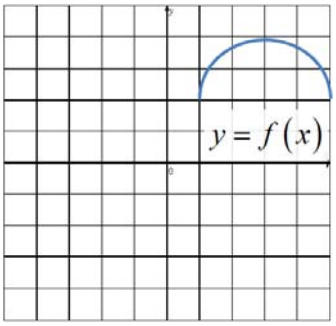
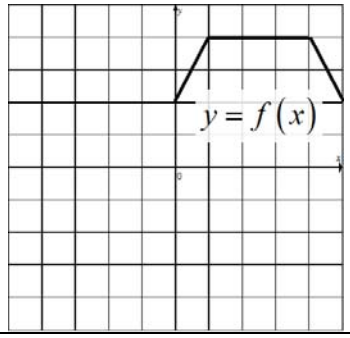
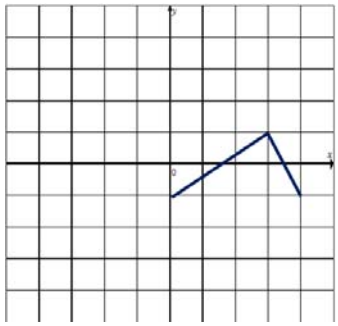
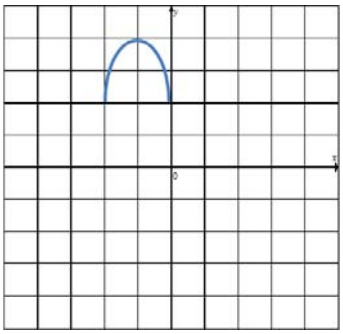
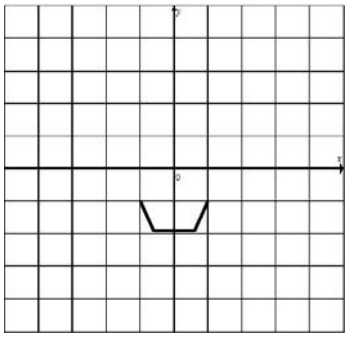
i) $y = -2|f(3x-1)|$

4. Point (e,f) is on the graph of $y = f(x)$, what point must be on the following functions:

a) $y = -\frac{1}{4}f(x-3)$

b) $y = \frac{1}{f(x+4)}+5$

5. Given the graph of $y = f(x)$ on top, what is the equation of the corresponding graph below:

a) 	b) 	c) 
		

6. What is the period of $y = \sin 2\pi(x)$?

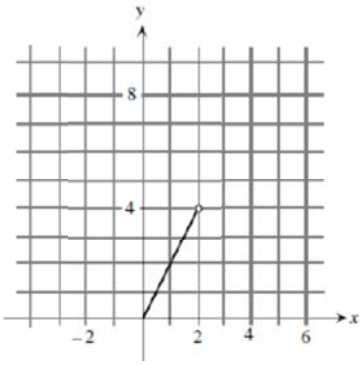
7. The graph of $y = \cos x$ is transformed to $y = \cos(2x + 8)$, what are the transformations involved? Indicate all transformations in order.

8. The graph of $y = \sqrt{x}$ is transformed to $y = \sqrt{5 - 3x}$, what are the transformations involved? Indicate all transformations in order.

9. The graph of $y=\frac{1}{x}$ is transformed to $y=3\left|\frac{1}{2x+4}\right|+4$, what are the transformations involved? Indicate all transformations in order.

10. The function $y=4x^2+4x+1$ is shifted three units right to become $y=(2x-k)^2$. What is the value of "k"?

11. Part of the graph for $y=f(x)$ is shown, $0\le x<2$. If $g(x+2)=\frac{1}{2}f(x)$ for all real values of "x", draw the graph of $g(x)$ for the intervals $-2\le x<0$ and $2\le x<6$.



12. Challenge: if $x=\frac{1}{2}$ then the value of the product: $(1+x)(1+x^2)(1+x^4)\times.....\times(1+x^{2^{n-1}})\times...\times(1+x^{128})$ is $2-2^k$. What is the value of "k"? CNML1994 4-6