

Name \_\_\_\_\_

Homework 2  
*Piecewise Functions*  
*Transformations*

1. (2ea) Given the function  $q(x) = \begin{cases} -\sqrt{2} & x < -3 \\ x + 5 & -3 \leq x \leq 3 \\ x^2 - 4 & x > 3 \end{cases}$ , evaluate each of the following:

(a)  $q(-4)$

(b)  $q(-3)$

(c)  $q(3)$

(d)  $q(6)$

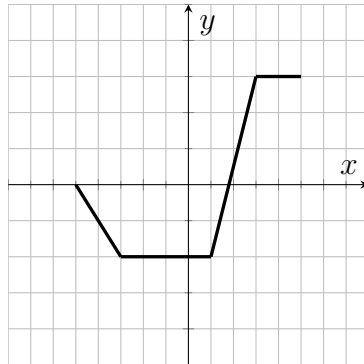
2. (2ea) If  $(7, 4)$  is a point on the graph of  $y = h(x)$ , determine a point which MUST be on the graph of the following:

(a)  $y = h(x - 1) + 1$

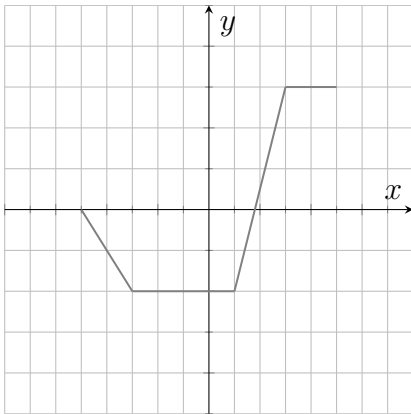
(b)  $y = -h(x + 2)$

(c)  $y = -h(x) + 10$

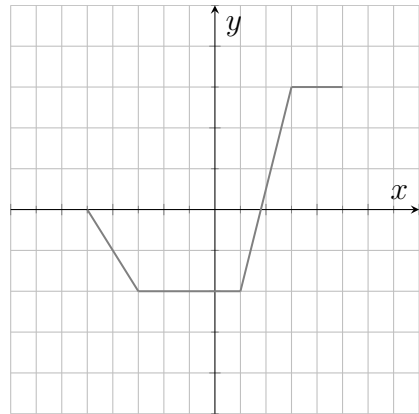
3. (2ea) Use the graph of  $y = f(x)$  given below to sketch the graphs of each of the following.



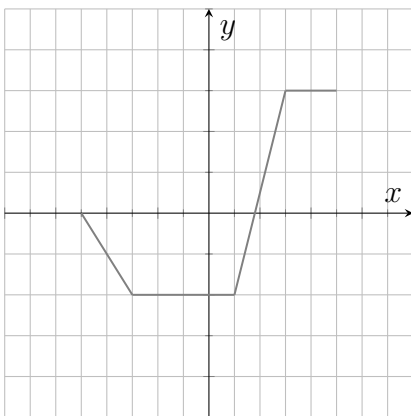
a)  $y = f(x + 3)$



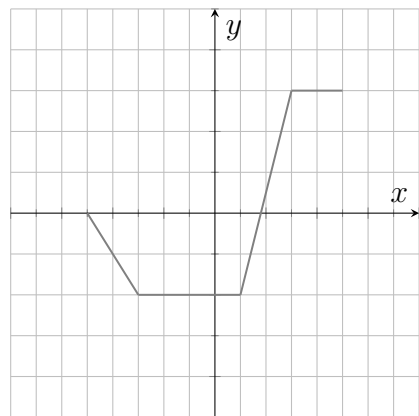
b)  $y = f(x) - 2$



c)  $y = f(x - 3) + 2$

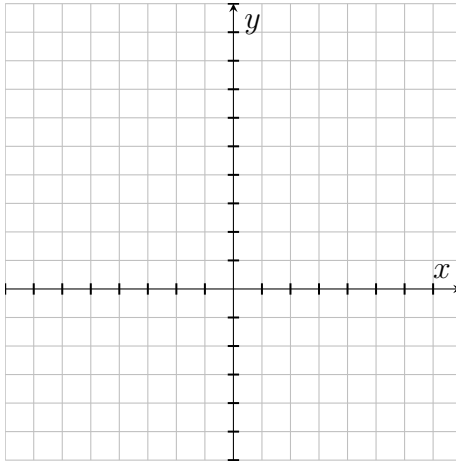


d)  $y = -f(x)$



4. (4) Sketch the piecewise defined function  $g(x) = \begin{cases} -x & x < -3 \\ x^2 & -3 \leq x < 2 \\ 4 & x > 2 \end{cases}$  on the axes below.

Assume each axis is marked in units of 1.

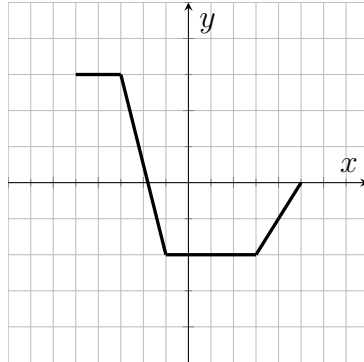


5. (3ea) Suppose  $f(12) = -4$ . Determine a point which **must** lie on the graph of the following:

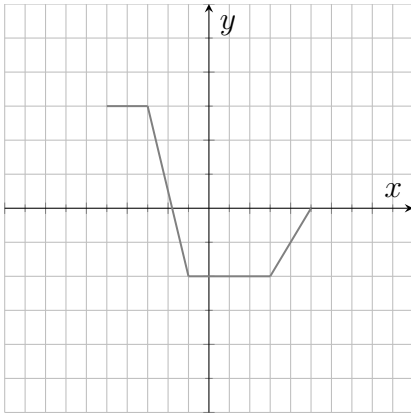
(a)  $y = -3f(x + 8) - 5$

(b)  $y = \frac{1}{2}f\left(\frac{4}{3}x\right)$

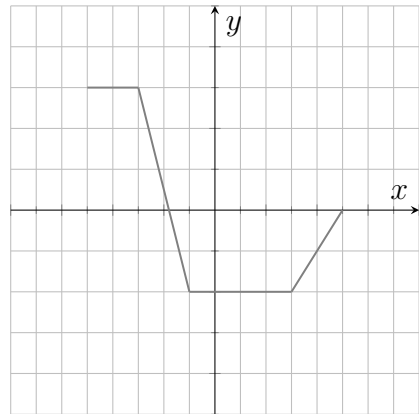
6. (2ea) Use the graph of  $y = f(x)$  given below to sketch the graphs of each of the following.



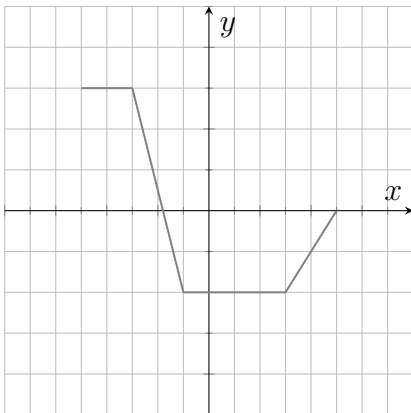
a)  $y = 2f(x)$



b)  $y = f(2x)$



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



d)  $y = f(-x) + 1$

