

Name: _____ Score: _____

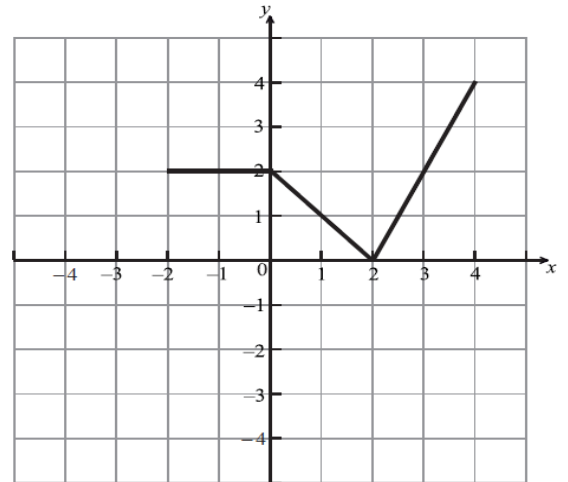
Teacher: _____ Date: _____

Transforming functions

1- The diagram below shows the graph of a function $f(x)$, for $-2 \leq x \leq 4$.

Copy the graph. Draw these functions on the same axes.

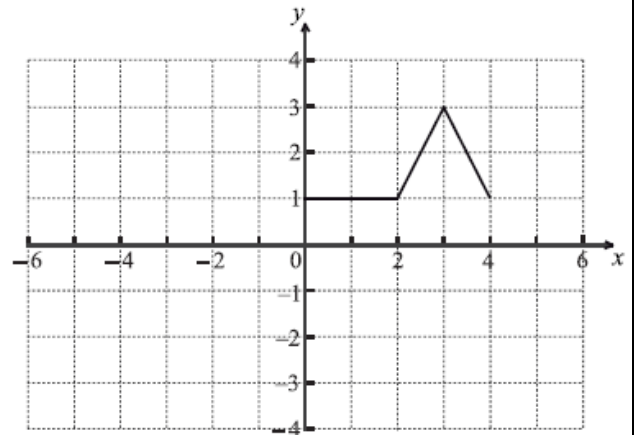
- | | |
|----------------|----------------|
| (a) $f(x) + 3$ | (b) $f(x) - 4$ |
| (c) $f(x + 5)$ | (d) $f(x - 2)$ |
| (e) $2f(x)$ | (f) $f(2x)$ |
| (g) $f(-x)$ | (h) $-f(x)$ |



2- Consider the graph of $f(x)$ shown below.

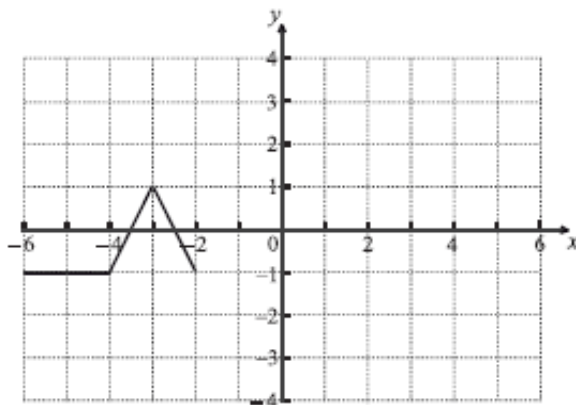
On the **same** grid sketch the graph of

- | | |
|-----------------|-----------------|
| (a) $y = f(-x)$ | (b) $y = -f(x)$ |
|-----------------|-----------------|

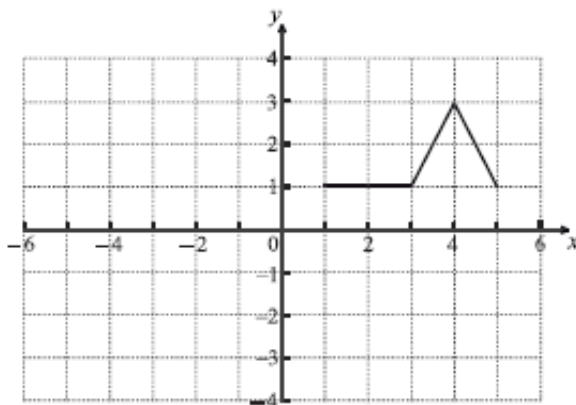


Functions g , h , p and q are transformations of $f(x)$. Write each transformation in terms of $f(x)$

(c) $g(x)$

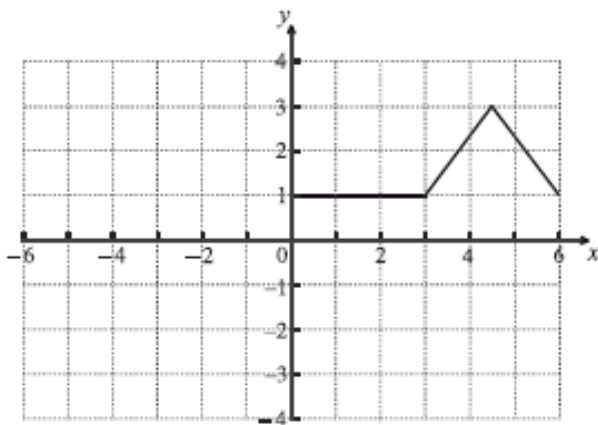


(d) $h(x)$



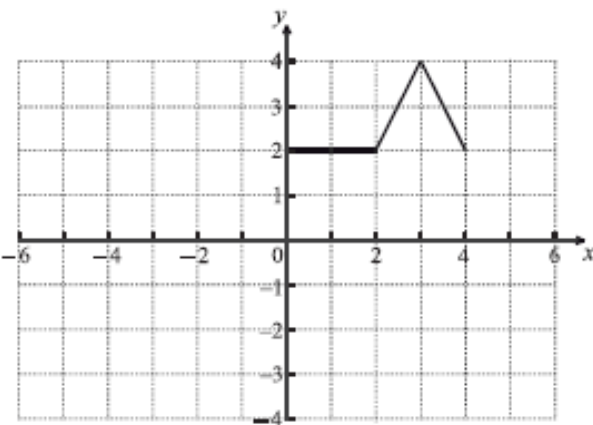
(e)

$p(x)$



(f)

$q(x)$



3- The diagram below shows the graph of a function $f(x)$, for $-1 \leq x \leq 4$.

Make separate copies of the graph and draw the function after each transformation.

(a) $f(x) + 2$

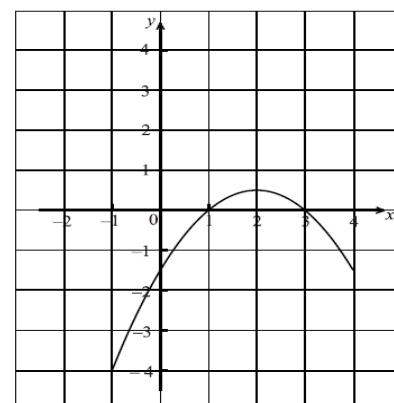
(b) $f(x + 2)$

(c) $f(-x)$

(d) $2f(x)$

(e) $f(x - 2) + 3$

(f) $f(2x)$



4. In each case, describe the transformation that would change the graph of $f(x)$ into the graph of $g(x)$

(a) $f(x) = x$, $g(x) = -3x + 2$

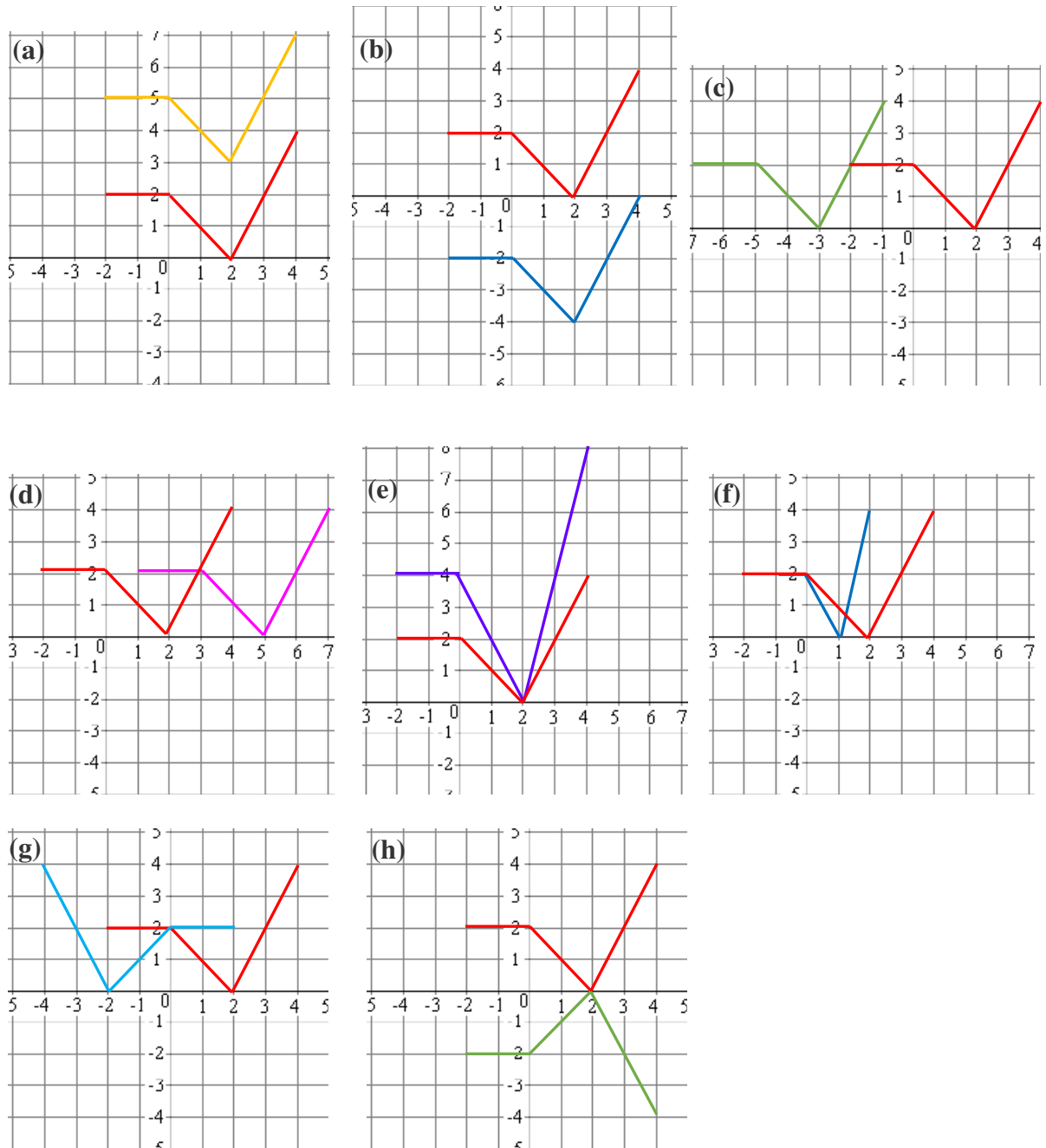
(b) $f(x) = x^2$, $g(x) = (x - 3)^2$

(c) $f(x) = x^3$, $g(x) = -(x)^3$

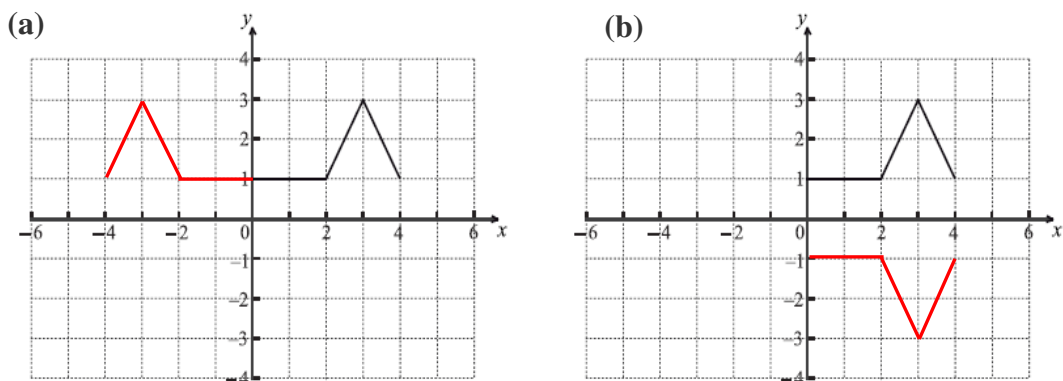
(d) $f(x) = x$, $g(x) = (x - 3) + 2$

Solutions

1-

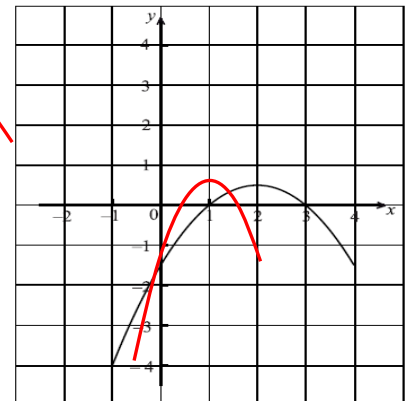
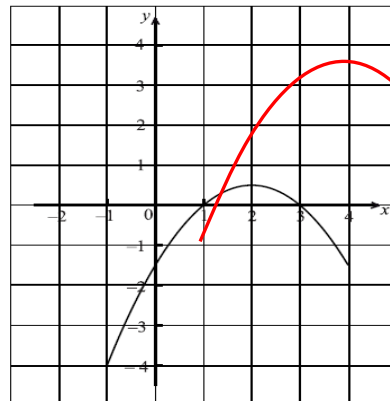
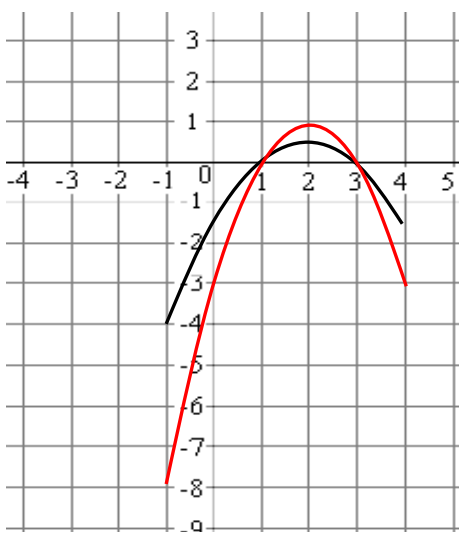
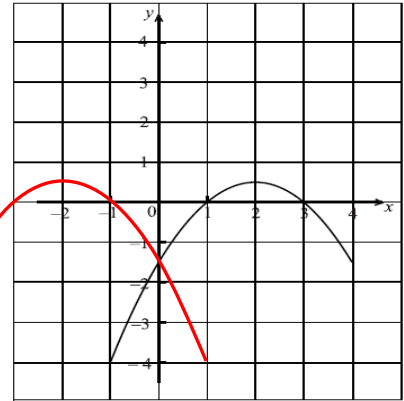
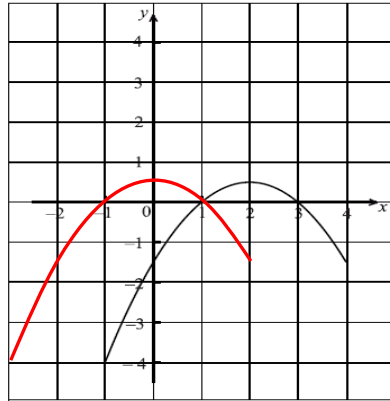
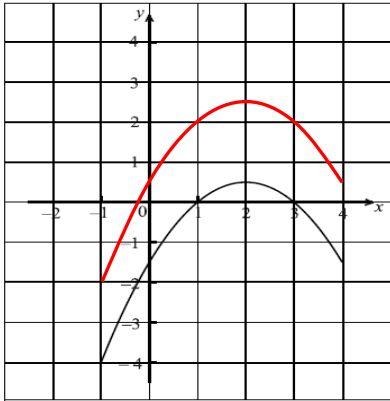


2-



(c) $f(x + 6) - 2$ (d) $f(x - 1)$ (e) $f(1.5x)$ (f) $f(x) + 1$

3-



- 4- (a) Vertical stretch SF 3, reflection in the x -axis, vertical translation 2 units upwards.
 (b) Horizontal translation 3 units to the right.
 (c) Reflection in the x -axis
 (d) Vertical translation 2 units upwards, horizontal translation 3 units to the right.