

SEND - IN ASSIGNMENT**UNIT 1****Transformations**

Name: _____

Teacher: _____

If you are cross enrolled, state your other school besides DESK.

Date completed and submitted: _____

- You must show ALL work to receive full credit for the questions.

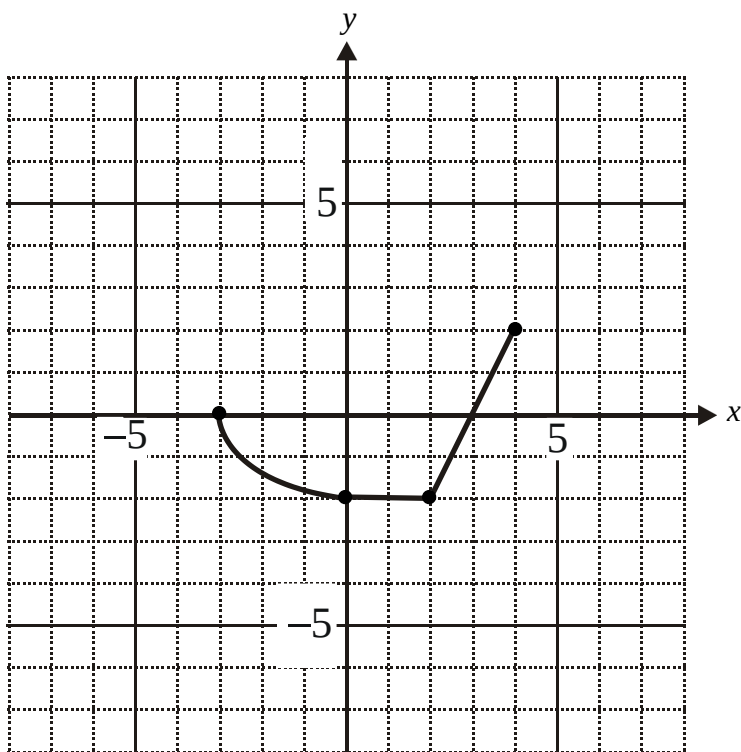
Total _____ = _____ %
50

1. For the function $y = f(x)$ graphed below. Sketch each function accurately on the grid provided.

For each graph: a) explain what change(s) you made to $y = f(x)$.

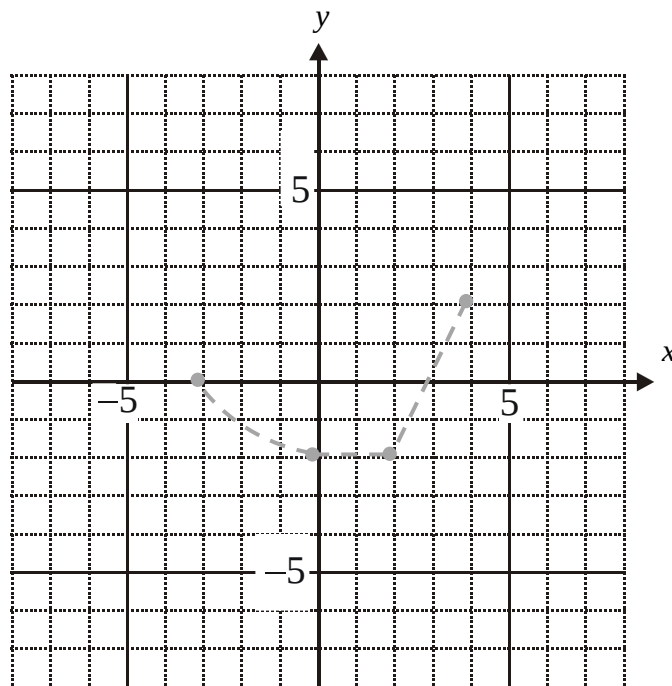
b) Give the new coordinates of the point provided in each question.

(4 marks for each, 2 marks for graph)



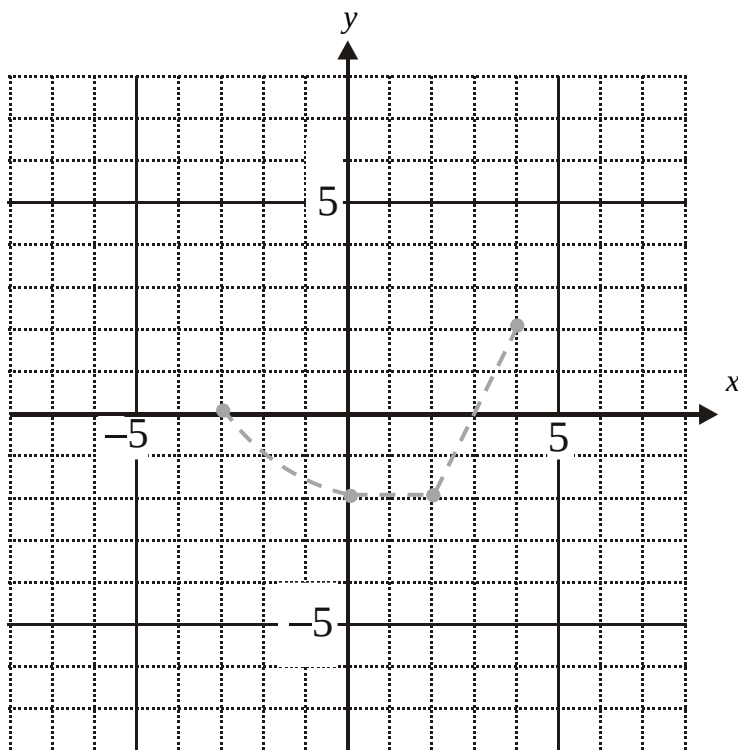
a) $y = \frac{1}{2}f(x)$

$(2, -2) \longrightarrow$ _____



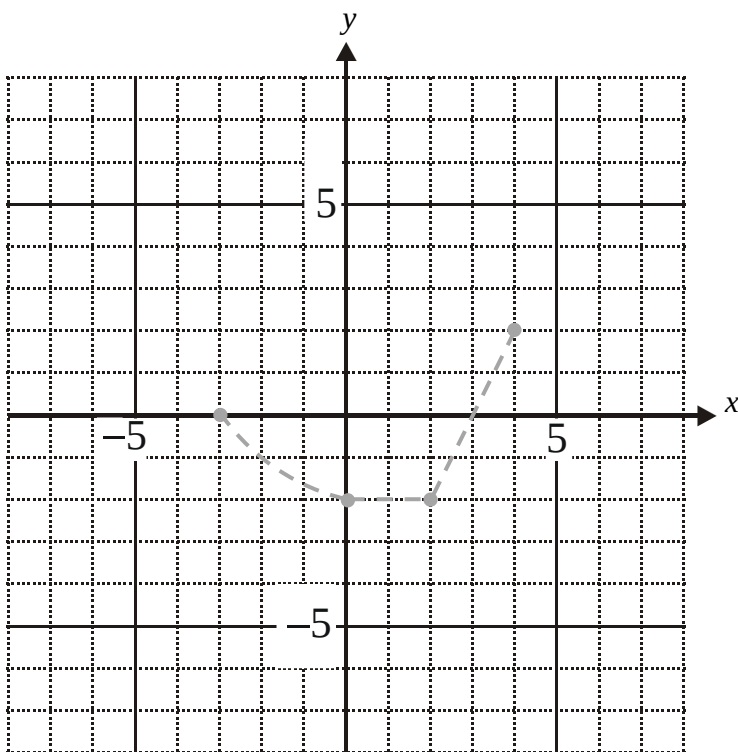
b) $y = f\left(-\frac{1}{2}x\right)$

$(4, 2) \longrightarrow$



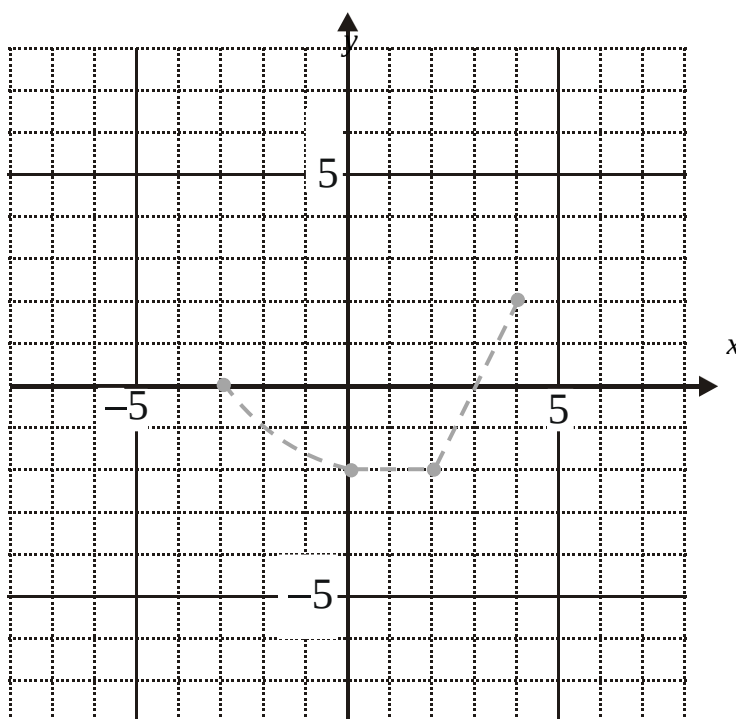
c) $x = f(y)$

$(0, -2) \longrightarrow$

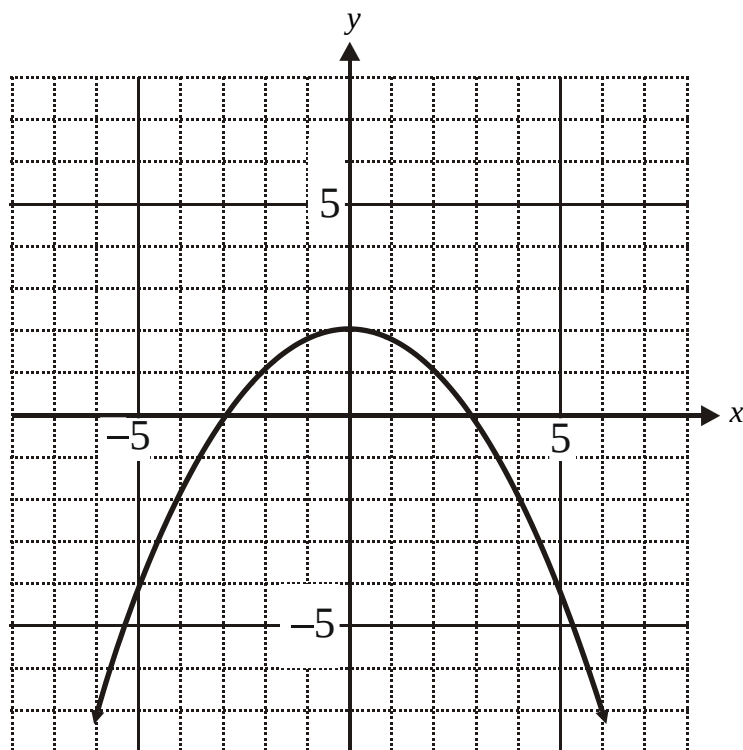


d) $y = f(2x + 6) - 1$

$(4, 2) \longrightarrow$

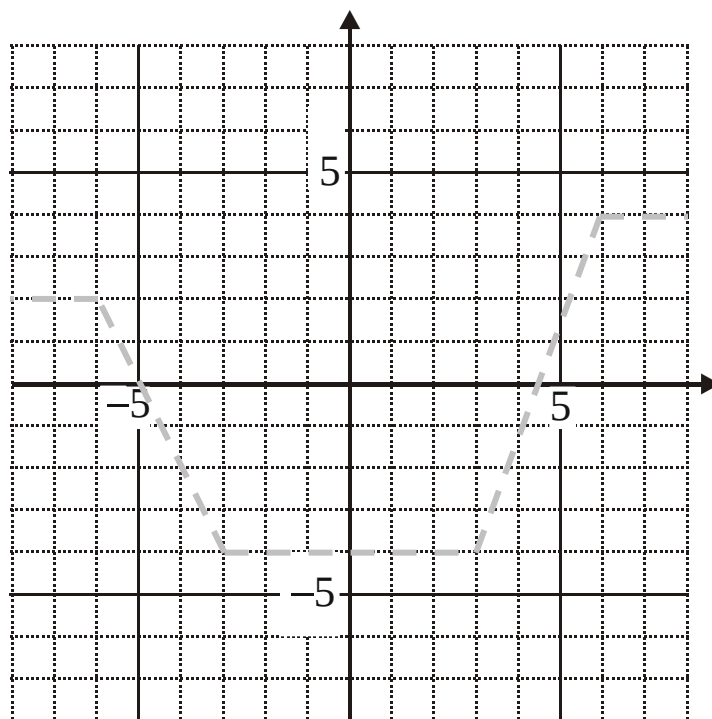
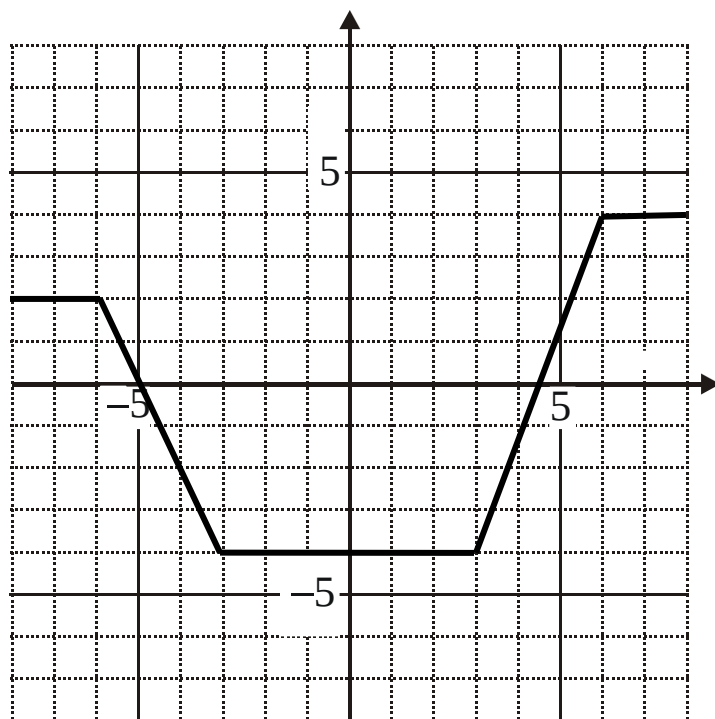


2. Given the graph of $y = f(x)$, on the same grid sketch the graph of $y = -\frac{1}{2}f(2x) - 2$



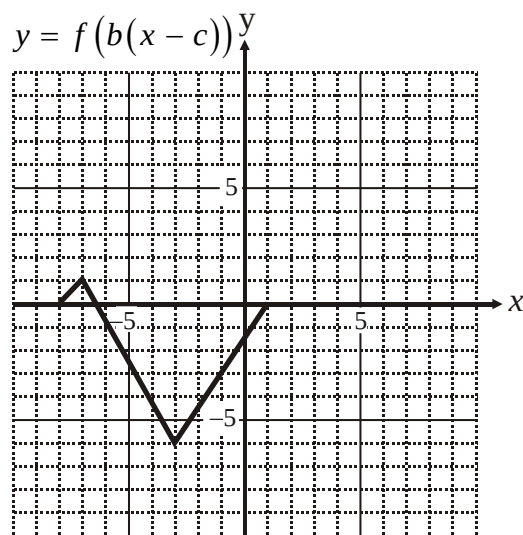
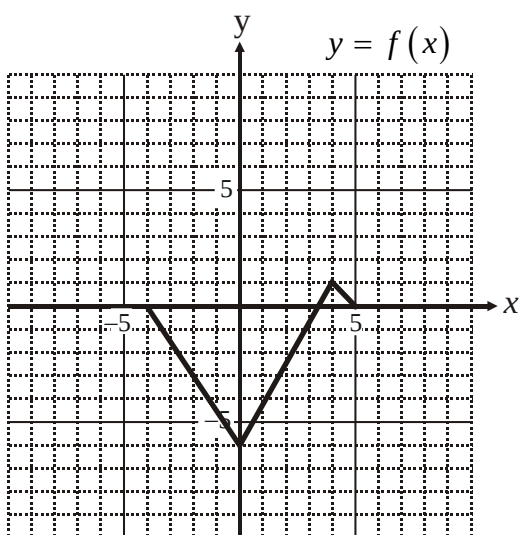
3 marks

3. Given the graph of the function $y = f(x)$ below, sketch the graph of $2y = f(2x - 4) + 6$ on the grid provided.



3 marks

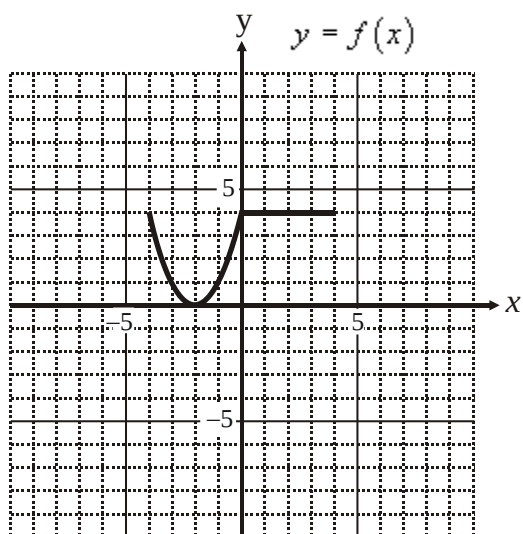
4. Two functions are graphed below. $y = f(x)$ and $y = f(b(x - c))$. Determine the values of b and c .



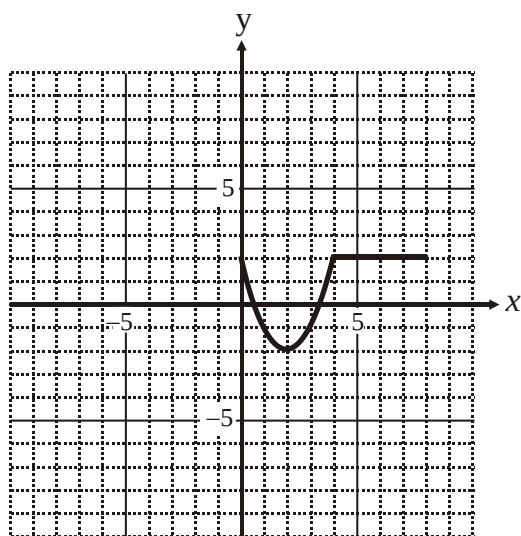
4. _____

2 marks

5. The graph of $y = f(x)$ is shown below. The sketches of transformations of $f(x)$ are given in the following graphs. Write an equation in terms of $f(x)$ to represent the graphs of the transformations. Be sure to prove your equation by using transformed coordinates.

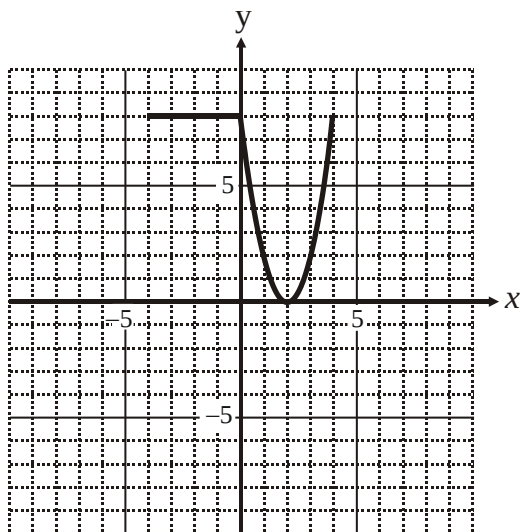


a)



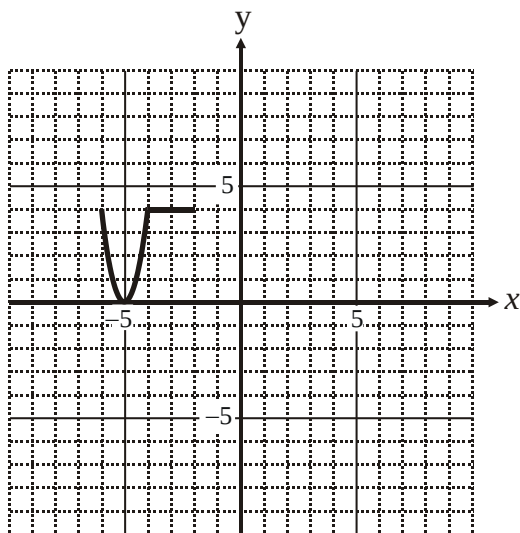
a) _____
2 marks

b)



b) _____
2 marks

c)



c) _____
2 marks

6. If $f(x) = \frac{4x}{3x-5}$, determine the equation of $f^{-1}(x)$, the inverse of $f(x)$.

6. _____
2 marks

7. Write the equation of the transformed function $y = 3x^2 + 5$ after the following transformations in the order given.

a) A vertical compression by a factor of $\frac{1}{4}$ followed by a transformation of 5 units left.

a) _____
2 marks

b) A horizontal compression by a factor of $\frac{1}{3}$, then a reflection in the y -axis followed by 7 units up.

b) _____
2 marks

c) A horizontal expansion by a factor of 2 followed by a translation of 5 units right and 3 units down.

c) _____
2 marks

8. The graph of $y = \sqrt{x^2 + 7}$ has the following transformation applied to it. Determine an equation for the new graph.

a) a horizontal compression by a factor of $\frac{1}{3}$.

a) _____
2 marks

b) a vertical compression by a factor of $\frac{1}{4}$, then reflected in the y -axis.

b) _____
2 marks

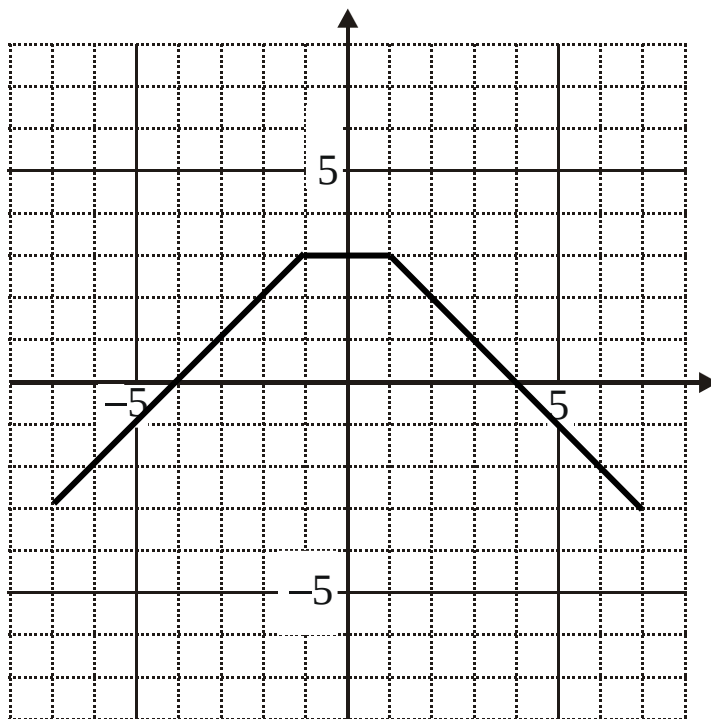
9. For the function $y = f(x)$ graphed below, graph the transformation a, b, and c then list all the coordinates of the **INVARIANT** points for the following transformations.

Hint: Invariant points do not move when a transformation is applied. They are **FIXED** points.

a) $y = -f(x)$

b) $y = f(-x)$

c) $x = f(y)$



a) _____
2 marks

b) _____
2 marks

c) _____
2 marks

10. The point $(10, 4)$ is on the graph of $y = f(x)$, which point must be on the graph

of $y = \frac{4}{f(-x+3)-1} + 5$?

10. _____
2 marks