Name:	LG 2 Ve Student #:	rА
Date:	T.A. #:	

Mathematics 12 Pre-Calculus LEARNING GUIDE 2 TEST – TRANSFORMATIONS

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*Full marks may NOT be given for the final answer only.

When using a calculator, you should provide a decimal answer that is correct **to at least two decimal places** (unless otherwise indicated). Such rounding should occur **only** in the final step of the solution.

1. Using the graph of y = f(x) below, sketch and label the graphs of: (2 marks) a) f(2x) + 2



LG 2 Ver A

Describe what happens to the graph of a function if you make each change to its equation:

(2 marks each)

a) replace y with -y, then replace x with x + 1

REFLECT IN THE X AXIS, LEFT 1

b) replace x with x - 2 and y with y - 5.

R16HT 2 UP 5

c) replace x with $\frac{1}{2}x$ and y with 3y.

HE BAFO 2 VL BAFO 1

d) replace x with -2x and y with $\frac{1}{3}y$, then y with y + 1 REFLECT IN THE YAXIS, HC BAFO 1, VE BAFO 3, Down 1 2

 Describe what happens to the equation of a function if you make each change to its graph:

(2 marks each)

a) reflect the graph about the line y = x.

X q y VALVEJ ARE SWITCHED On y = f'(y)

b) stretch (expand) horizontally by a factor of 3 and vertically by a factor of 4.

X IS REPLACED WITH 1 X AND Y IS REPLACED WITH 1 Y /12 $on \quad y = Y - f\left(\frac{1}{2}x\right)$

LG 2 Ver A

- c) stretch (compress) vertically by a factor of $\frac{1}{5}$ and translate 2 units up.
- I IS REPLACED WITH 54 AND THEN Y IS REPLACED WITH y-2. $y = \frac{1}{5} f(x) + 2$
- 5. Given the graph of y = f(x), sketch the graph of y = -2f(x 1) + 3. (2 marks)



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LG 2 Ver A 6. a) Given the graph of f(x) below, sketch and label the graph of $y = f^{-1}(x)$. (3 marks)

b) How do can you tell by looking at the graph of f(x) that the inverse will not be a function? (1 mark)

POES NOT PASS HORIZONTAL LINE TEST.

c) How could you restrict the domain of f(x) so that the inverse would be a function? (1 mark)

LG 2 Ver A

7. What is the inverse of the relation $y = (x+1)^3$?

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$$X = (Y+1)^{2}$$

$$J_{x} = Y+1$$

$$Y = J_{x} -1$$

8. If (2, -1) is a point on the graph of y = f(x), what must be a point on the graph of y = -f(2(x + 2)) - 3? (2 marks)

$$\begin{array}{c} (2,1) & RCFWET7 \times \\ (1,1) & HC BAF0 & ! \\ (-1,1) & LGF72 \\ (-1,-2) & Down \end{array}$$

9. Give the equation of the new relation if the graph of $y = x^2 - x + 1$ were stretched (expanded) vertically by a factor of 2, stretched (compressed) horizontal by a factor of $\frac{1}{3}$, reflected in the y axis, and moved down 1. (2 marks)

$$\begin{aligned} \sum_{i=1}^{NE} \frac{y_{i}}{y_{i}} &= x^{2} - x + i \\ H_{i}^{C} \sum_{i=1}^{NE} \frac{y_{i}}{y_{i}} &= (2x)^{2} - 3x + i \\ (\sum_{i=1}^{NE} \frac{y_{i}}{y_{i}} &= (2x)^{2} - 3x + i \\ (\sum_{i=1}^{NE} \frac{y_{i}}{y_{i}} &= (-2x)^{2} + 3x + i \\ (\sum_{i=1}^{NE} \frac{y_{i}}{y_{i}} &= (-2x)^{2} + 3x + i \\ (\sum_{i=1}^{NE} \frac{y_{i}}{y_{i}} &= (-3x)^{2}$$