

Name _____ Date _____

Part A : Multiple choice (choose the best response)

1. The graph $f(x) = -4x + 1$ is reflected over the x -axis which produces a graph of $g(x)$. Which is the correct equation of $g(x)$?

a) $g(x) = -4x - 1$ b) $g(x) = -4x + 1$ c) $g(x) = 4x + 1$ d) $g(x) = 4x - 1$

2. The point $(-4, 6)$ is on the graph of $f(x)$. We perform the following transformation $y = -f(x)$. Find the coordinates of the new point.

a) $(4, 6)$ b) $(4, -6)$ c) $(-4, 6)$ d) $(-4, -6)$

3. The domain of the function is $[-2, 4]$ and the range is $[6, 8]$. If this function is reflected over the line $y = x$, find the domain of this new function.

a) $[-4, 2]$ b) $[-6, -8]$ c) $[6, 8]$ d) $[-2, 4]$

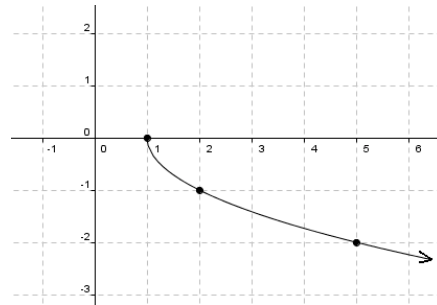
4. Which of the following is identical to its inverse?

a) $y = 2x$ b) $y = \sqrt{x}$ c) $y = 1 - x$ d) $y = -1$

5. Find the equation of the following graph:

a) $y = -\sqrt{x-1}$ b) $y = \sqrt{-(x-1)}$

c) $y = -\sqrt{x} - 1$ d) $y = \sqrt{-(x+1)}$



6. Find the domain of the following function: $y = \sqrt{3x+4}$

a) $x \leq -\frac{3}{4}$ b) $x \geq -\frac{3}{4}$ c) $x \geq -\frac{4}{3}$ d) $x \leq -\frac{4}{3}$

7. The point (m, n) is on the graph of $y = f(x)$. Find the coordinates of the point that is on the graph $y = \frac{1}{2}f\left(\frac{x}{4}\right)$.

a) $(4m, 2n)$ b) $\left(\frac{m}{4}, 2n\right)$ c) $\left(\frac{m}{4}, \frac{n}{2}\right)$ d) $(4m, \frac{n}{2})$

Part B : Short Answer

1. The function $f(x)$ has a range of $[-2,4]$. Find the range of the function $y = \sqrt{f(x)}$.

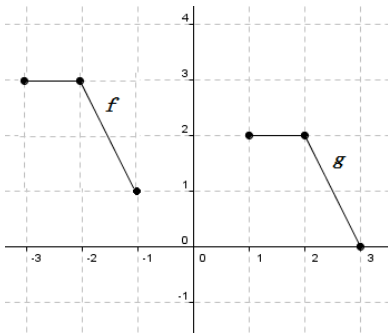
2. The domain of $f(x)$ is $[-4, 2]$. Find the domain of the following graph $y = -f(2x)$.

3. The inverse of the function $f(x) = (x + 1)^2 - 3$ is only a function if we restrict the domain of the original function. Give a restriction on $f(x)$ that would guarantee that $y = f^{-1}(x)$ would be a function.

4. Find the equation of the inverse of the following function:

$$f(x) = \frac{x-3}{2} + 4$$

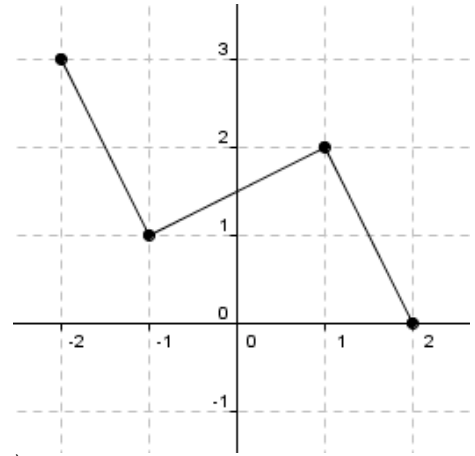
5. Find the equation of $f(x)$ in terms of $g(x)$.



6. The point $(-2, 6)$ is on the graph $y = f(x)$. What point would be on the graph of $y = -2f(x)+1$?

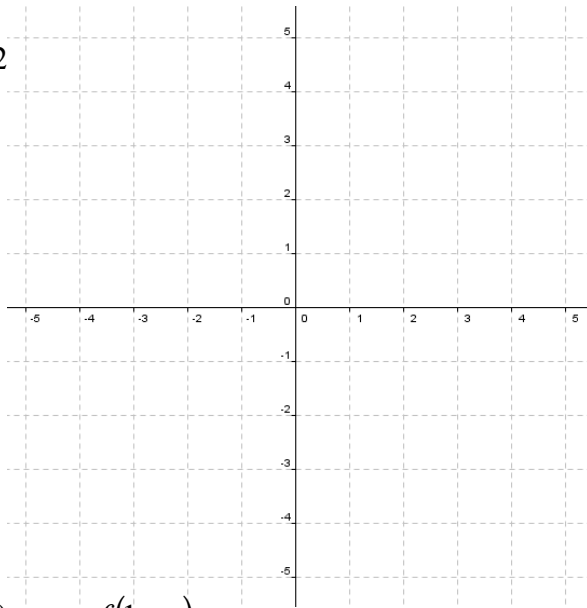
Part C : Long answer (NO CALCULATOR)

1. Given the graph of $f(x)$ on the right, sketch the following graphs.



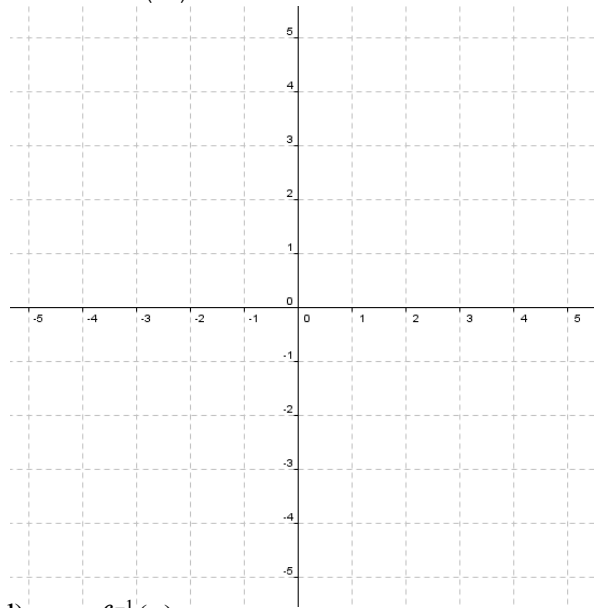
a) $y = f(x-1) + 2$

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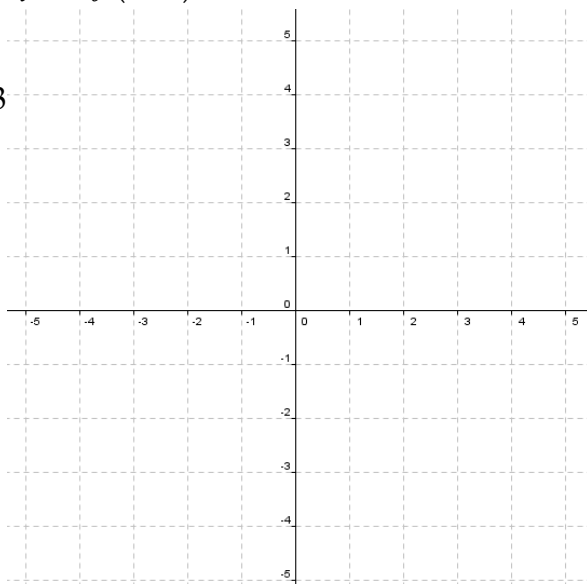
b) $y = \frac{1}{2}f\left(\frac{x}{2}\right) - 1$

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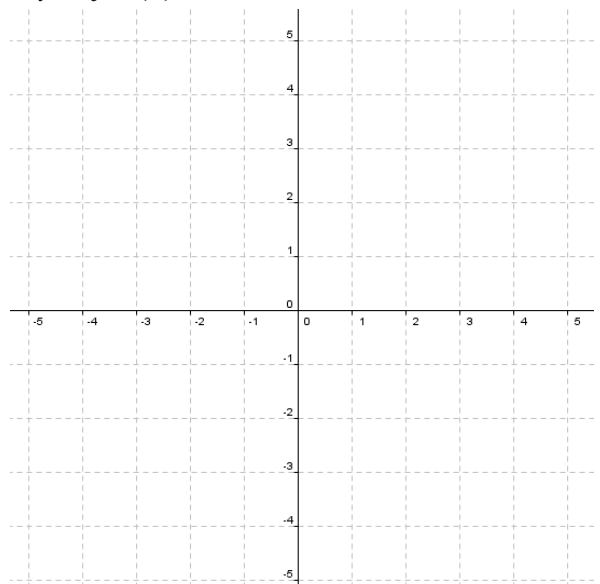
c) $y = -f(1-x)$

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d) $y = f^{-1}(x)$

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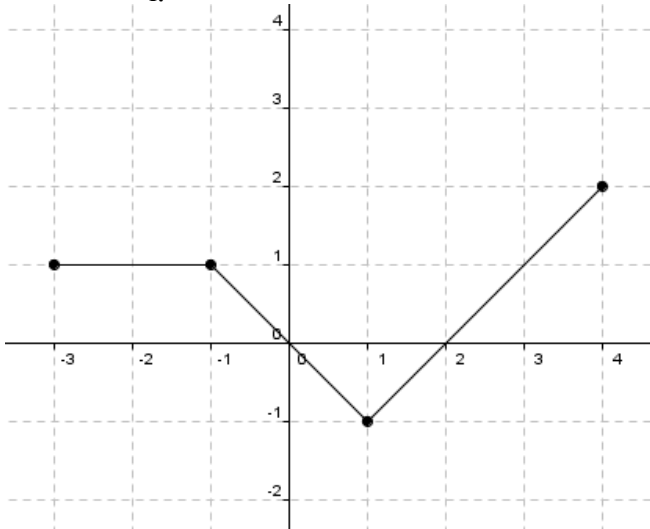
- e) For « d », give a restriction to the original function that would guarantee that the inverse is a function.

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2. a) Given the graph $y = f(x)$, sketch the approximate graph of the function $y = \sqrt{f(x)}$ on the same Cartesian plane.

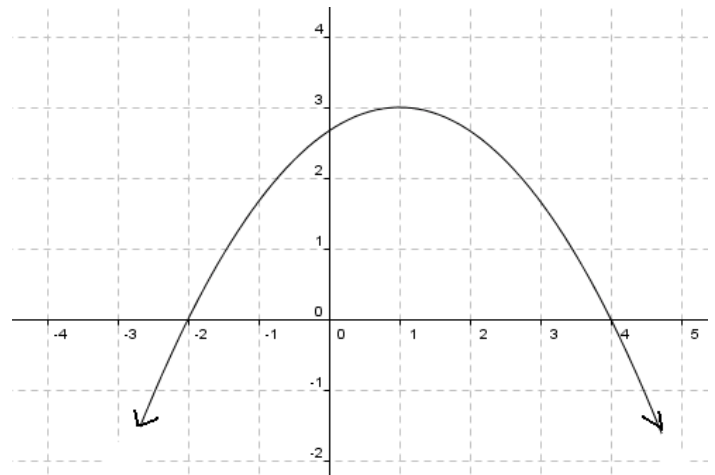
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i.



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ii.



- b) Explain why the domain of the function $y = \sqrt{f(x)}$ is not the same as the original function, $y = f(x)$.

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3. If you were given a graph $y = f(x)$, explain the steps that would be necessary to sketch the graph $y = -2f(3x) + 1$.

/3

4. Solve the following equation algebraically and graphically. Ensure to properly indicate which equation you are using for your graphs.

$$-2x - 1 = \sqrt{2 - x} + 1$$

$$y_1 =$$

$$y_2 =$$

/2

/3

