Name: _____   Date: _____

## UNIT #1 – FUNCTION TEST REVIEW

Part I Questions – Multiple Choice

1. Which of the following sets of ordered pairs would *not* be considered a function?
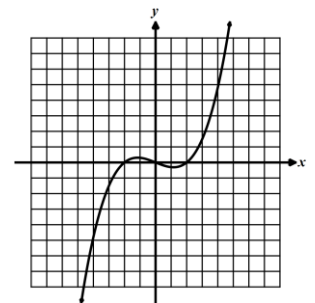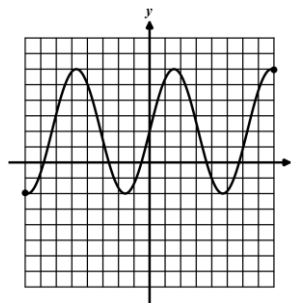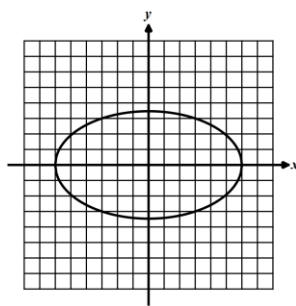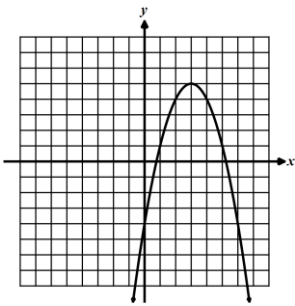
   (1) $\{(-4,1),(-1,7),(3,8),(5,3)\}$

   (2) $\{(-2,5),(6,1),(-2,10),(6,-1)\}$

   (3) $\{(2,8),(4,10),(6,8),(8,10)\}$

   (4) $\{(-3,5),(3,-5),(-6,7),(6,-7)\}$

2. In the following graph, the height of an object, in feet, is given as a function of time in seconds. Which of the following would be the range of this function?

   (1) $[0,5]$

   (2) $[0,11]$

   (3) $[176,576]$

   (4) $[0,576]$

Height (ft)
(5 , 576)
(0 , 176)
(11 , 0)
Time (sec)
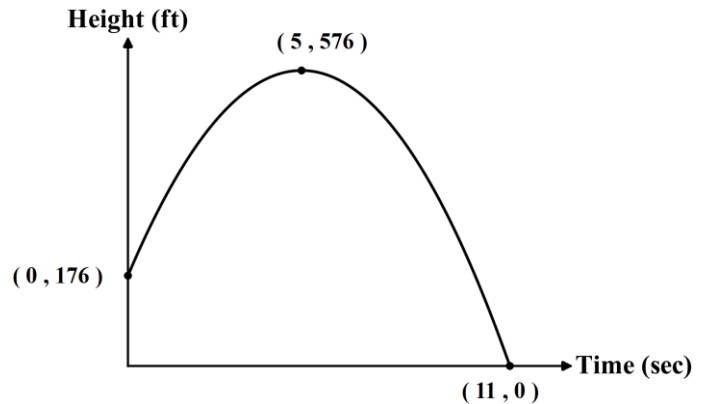
3. In which of the following four graphs is the output *not* a function of the input?
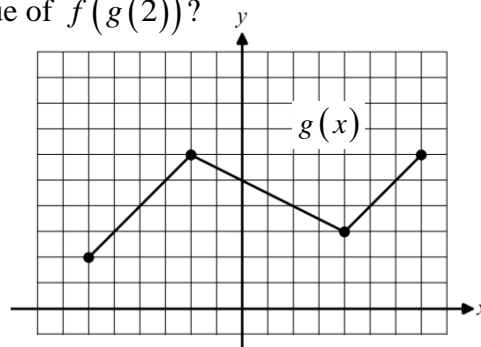

4. If $f(x) = -\dfrac{1}{2}x + 6$, then which of the following values solves the equation $f(x) = 10$?

   (1) 1   (3) −8
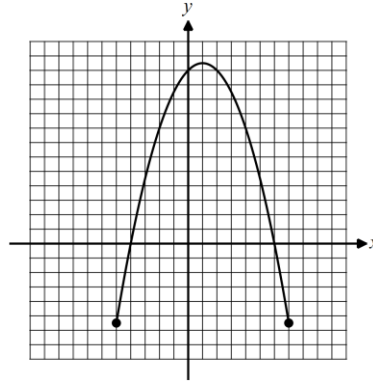
   (2) −4   (4) 11

5. The function f is defined by the formula $f(x) = x^2 + 2$ and the function g is defined by the graph shown below. Which of the following is the value of $f(g(2))$?

   (1) 18   (3) 5

   (2) 14   (4) 9

$g(x)$

6. Given the function $f(x)$ shown in the graph below, for which of the following intervals is $f(x) > 0$?

(1) $(0, 8)$

(2) $[0, 8]$

(3) $(-4, 6)$

(4) $[-4, 6]$

7. Which of the following values of x would *not* be in the domain of the function $f(x) = \dfrac{x-7}{2x+5}$?

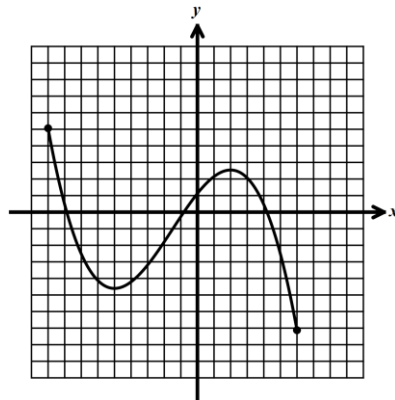(1) 7   (3) -5

(2) $-2\frac{1}{2}$ (4) -7

8. If the point $(4, -2)$ lies on the graph of $y = f(x)$, then which of the following points must lie on the graph of its inverse, i.e. $y = f^{-1}(x)$?

(1) $(-2, 4)$ (3) $(-4, 2)$

(2) $\left(\dfrac{1}{4}, -\dfrac{1}{2}\right)$ (4) $(4, 2)$

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9. Given the function shown below, over which of the following intervals is the function always increasing?

(1) $0 < x < 5$

(2) $-5 < x < 2$

(3) $-1 < x < 4$

(4) $-9 < x < -5$

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10. Which of the following is the *y*-intercept of the piecewise defined function $g(x) = \begin{cases} 6x+5 & x < -2 \\ (x-3)^2 - 1 & x \geq -2 \end{cases}$?

(1) 5   (3) -1

(2) 6   (4) 8

11. Which of the following is the equation of the inverse of the linear function $y = 4x - 2$?

(1) $y = \dfrac{1}{4}x + \dfrac{1}{2}$ (3) $y = -4x + 2$

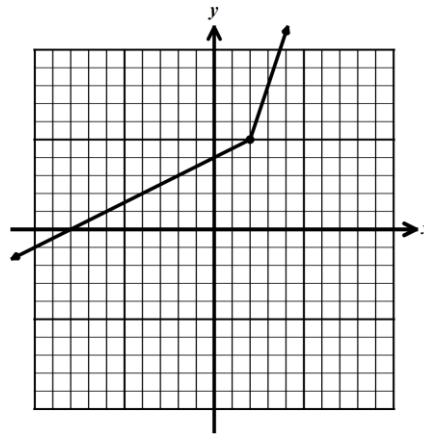(2) $y = \dfrac{1}{4}x + 2$ (4) $y = -\dfrac{1}{4}x + 8$

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12. Which of the following is the equation of the piecewise linear function shown below?

(1) $f(x) = \begin{cases} x+4 & x<2 \\ 3x+5 & x\ge 2 \end{cases}$

(2) $f(x) = \begin{cases} \dfrac{1}{2}x+4 & x<2 \\ 3x-1 & x\ge 2 \end{cases}$

(3) $f(x) = \begin{cases} -\dfrac{1}{4}x+5 & x<2 \\ 3x-3 & x\ge 2 \end{cases}$

(4) $f(x) = \begin{cases} -2x+4 & x<2 \\ 4x+1 & x\ge 2 \end{cases}$

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13. The graph of a function and the graph of its inverse always have symmetry across

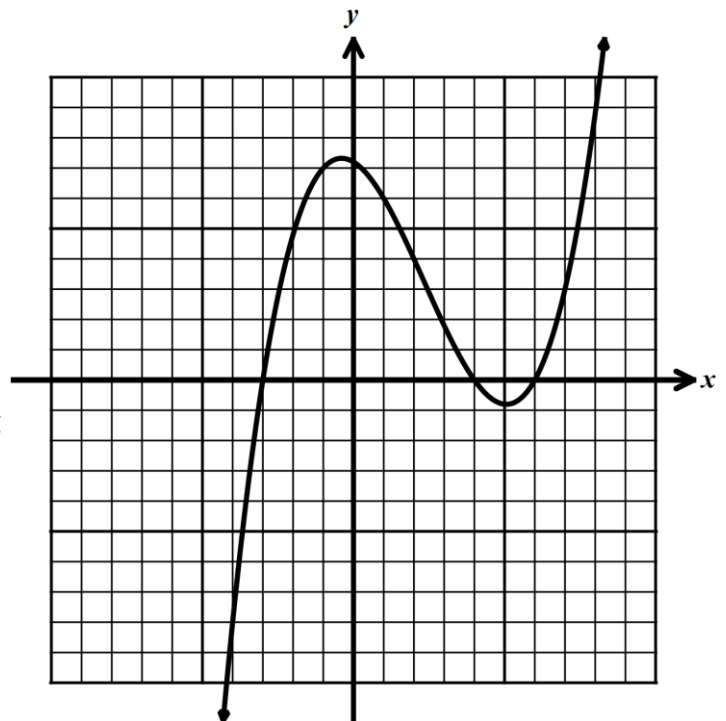(1) the x-axis (3) the line $y = x$

(2) the y-axis (4) the line $y = -x$

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Free Response Questions

14. Given the function $y = f(x)$ shown graphed below, answer the following questions.

(a) State the value of $f(2)$.

(b) How many values solve the equation $f(x) = 5$?
Explain how you arrived at your answer.

(c) On the interval $0 < x < 4$ is the function increasing
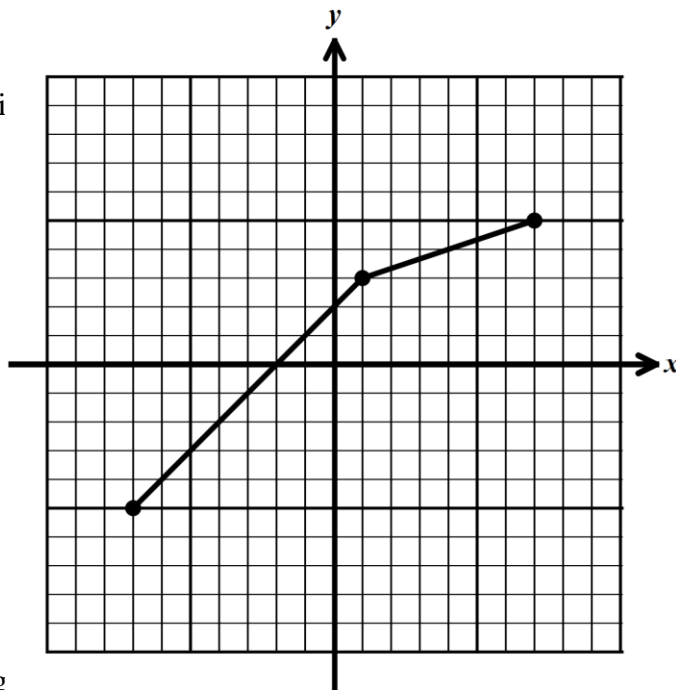or decreasing? How can you tell?

15. Given the function $y = f(x)$ shown below do the followi

    (a) Graph the function's inverse, $f^{-1}(x)$.

    (b) State the range of $f^{-1}(x)$.

    (c) What is the value of $f^{-1}(-3)$?
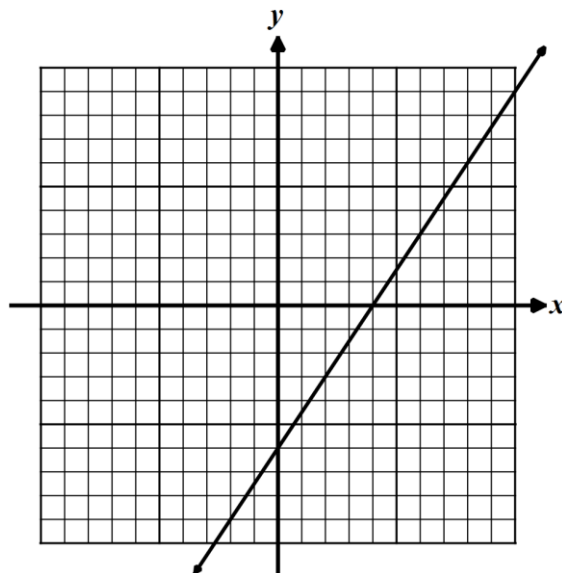
16. Given the linear graph shown below answer the following

    (a) Write the equation of the line in $y = mx + b$ form.

    (b) Create a graph of this linear function's inverse on the same
        set of graph paper.

    (c) Determine the equation of the inverse.

17. Determine a piecewise equation for the function shown graphed below.