

Name: key

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

X cant repeat!

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?

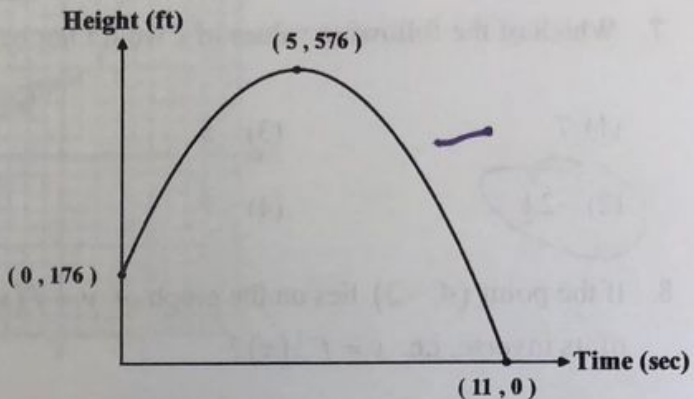
(1) $[0, 5]$

(2) $[0, 11]$

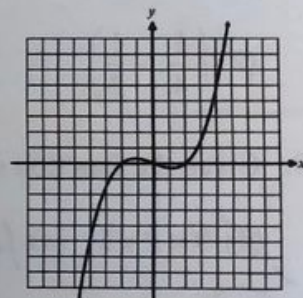
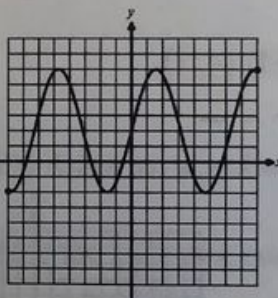
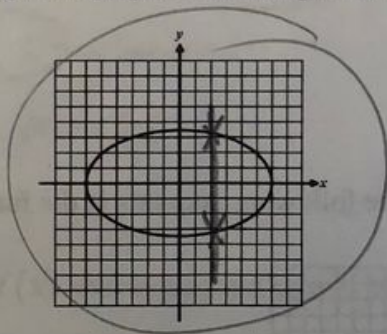
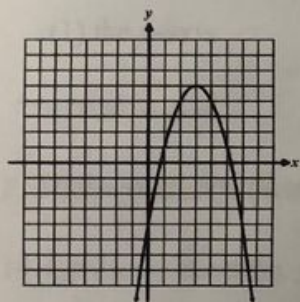
(3) $[176, 576]$

(4) $[0, 576]$

y values



3. In which of the following four graphs is the output *not* a function of the input?



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

(1) 1

(3) -8

(2) -4

(4) 11

$10 = -\frac{1}{2}x + 6$
 $-6 = -\frac{1}{2}x$
 $-2(4) = (-\frac{1}{2}x) \cdot 2$
 $-8 = x$

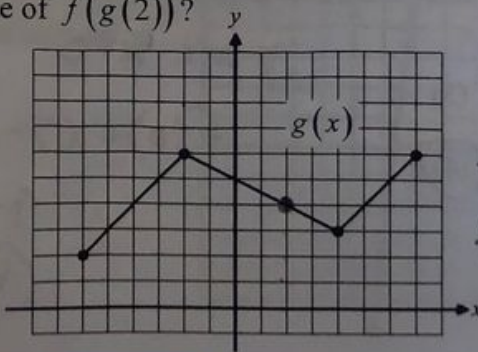
5. The function f is defined by the formula $f(x) = x^2 + 2$ and the function g is defined by the graph shown below. Which of the following is the value of $f(g(2))$?

(1) 18

(3) 5

(2) 14

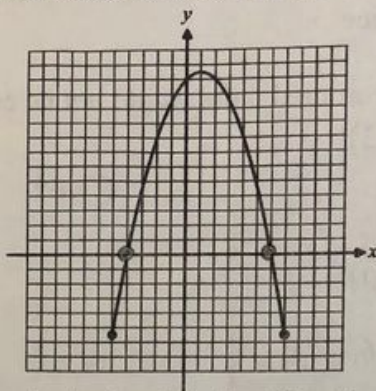
(4) 9



$g(2) = 4$
 $f(4) = (4)^2 + 2$
 $f(4) = 18$

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 $f(x) = \frac{x-7}{2x+5}$?

- (1) 7
- (2) $-2\frac{1}{2}$
- (3) -5
- (4) -7

Denom $\neq 0$

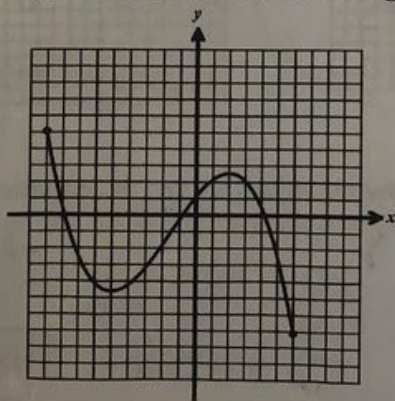
$$2x + 5 = 0 \quad \frac{2x}{-5} = \frac{-5}{-5} \quad x = \frac{-5}{-5} = \frac{5}{5} = 1$$

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) $(-2, 4)$
- (2) $(\frac{1}{4}, -\frac{1}{2})$
- (3) $(-4, 2)$
- (4) $(4, 2)$

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

- (1) $0 < x < 5$ inc/dec
- (2) $-5 < x < 2$ inc.
- (3) $-1 < x < 4$ inc/dec
- (4) $-9 < x < -5$ dec.



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
- (2) 6
- (3) -1
- (4) 8

y int: $x = 0$

$$f(0) = (0-3)^2 - 1$$

$$9 - 1 = 8$$

switch $x \leftrightarrow y$

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

(1) $y = \frac{1}{4}x + \frac{1}{2}$

(3) $y = -4x + 2$

$x = 4y - 2$

(2) $y = \frac{1}{4}x + 2$

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

$\frac{x+2}{4} = \frac{4y}{4}$

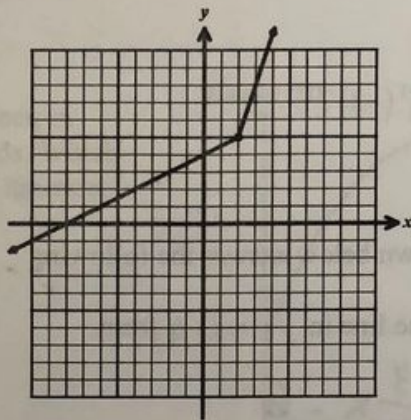
12. Which of the following is the equation of the piecewise linear function shown below?

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

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

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

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



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 $y = -x$

Free Response Questions

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

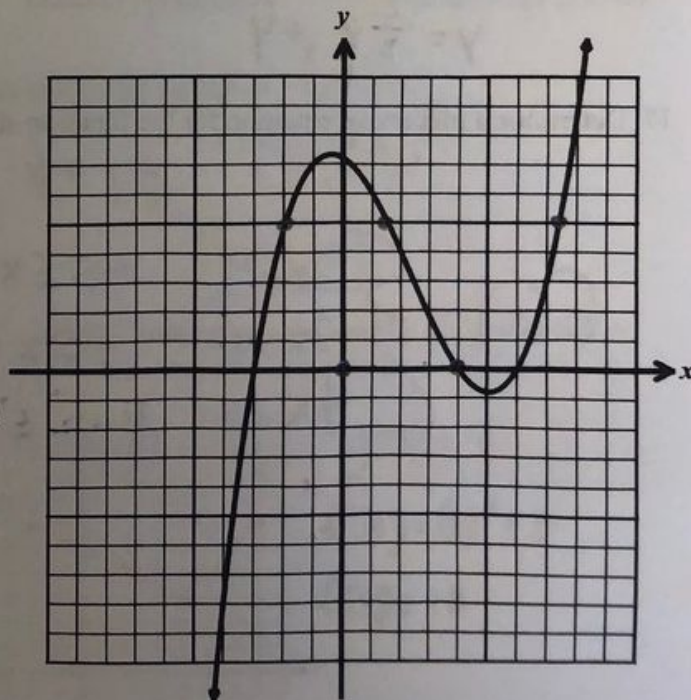
(a) State the value of $f(2)$. **4**

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

3, $y=5$ 3 times on graph.

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

Decreasing, graph is going down from $x=0$ to $x=4$.

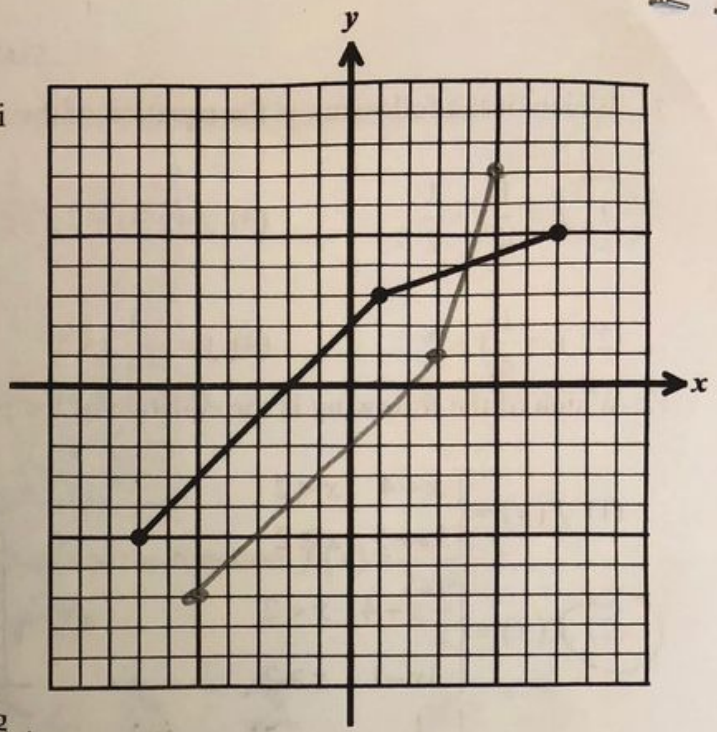


15. Given the function $y = f(x)$ shown below do the followi

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

(b) State the range of $f^{-1}(x)$.
 $[-7, 7]$

(c) What is the value of $f^{-1}(-3)$?
 -5

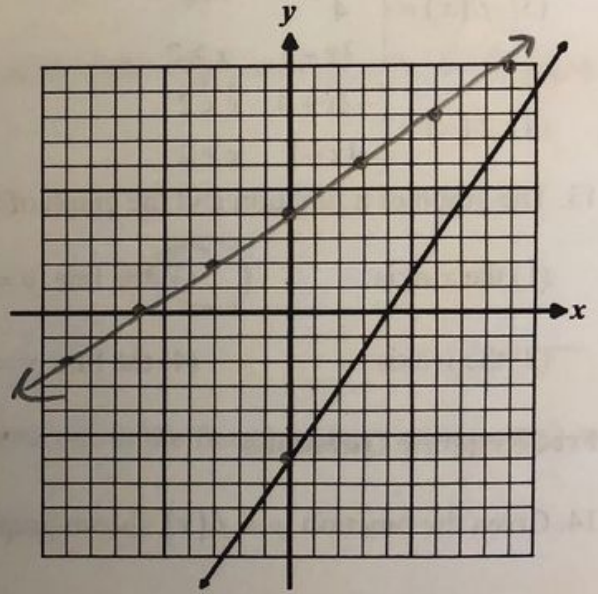


16. Given the linear graph shown below answer the following

(a) Write the equation of the line in $y = mx + b$ form.
 $y = \frac{3}{2}x - 6$

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

(c) Determine the equation of the inverse.
 $y = \frac{2}{3}x + 4$



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

$$f(x) = \begin{cases} x-4 & -5 \leq x < -1 \\ -2x+6 & -1 \leq x \leq 4 \\ \frac{1}{2}x+5 & 4 < x \leq 8 \end{cases}$$

