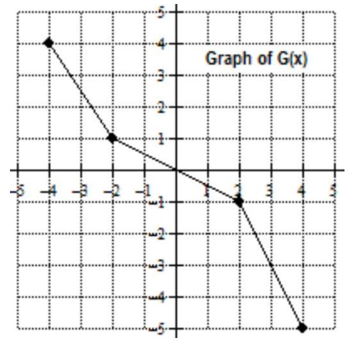
Review Unit 2.
Test is cumulative over unit 1 and unit 2.

FREE RESPONSE

Shown below are a table of values that represents a function, $f(x)$, and a graph that represents a function, $g(x)$. Use the representations to answer the following questions about F and G.

x	−5	−3	0	3	5
$F(x)$	−2	1	−5	1	−2



a. Is $F(x)$ even, odd, or neither even nor odd? Give a numerical reason for your answer.

For every point (x, y), there is a point $(-x, y)$

+1

$\therefore F(x)$ is EVEN

b. Initially, Jillian claimed that $G(x)$ was an odd function. However, she was cautioned by her teacher to take a closer look. Based on the graph, why would she have originally thought that $G(x)$ was an odd function? Specifically, what did she discover after looking again that made her realize she was wrong?

- Jillian might have thought there was rotational symmetry about the origin because $(0,0)$, $(-2,1)$ and $(2,-1)$ fit being ODD.

+1

- In order to have rotational symmetry every point (x,y) must have a corresponding $(-x,-y)$.

+1

- However the points $(-4,4)$ and $(4,-5)$ do not have corresponding points $(4,-4)$ and $(-4,5)$

+1

c. Is $F(x)$ a one-to-one function? Does $F^{-1}(x)$ exist? Completely explain your reasoning for both questions.

- The y-value -2 is paired with two x-values, -5 and 5.

+1

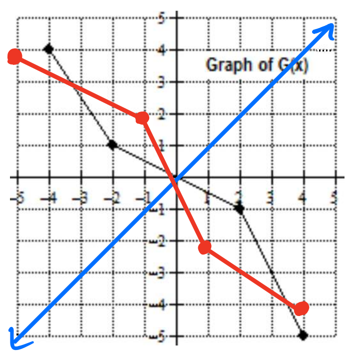
Thus $F(x)$ is not 1-1.

+1

- $\therefore$ $F^{-1}(x)$ does not exist.

d. Based on the graph, explain why $G^{-1}(x)$ exists? Then, draw the graph of $G^{-1}(x)$ on the grid below. Show and explain your numerical analysis that leads to the development of your graph.

+1



The graph of $G(x)$ passes the HLT

Thus, $G(x)$ is 1-1

+1

$\therefore$ $G^{-1}(x)$ exists

$G(x)$	$G^{-1}(x)$
$(-4,4)$	$(4,-4)$
$(-2,1)$	$(1,-2)$
$(2,-1)$	$(-1,2)$
$(4,-5)$	$(-5,4)$

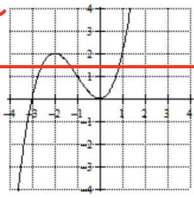
+1

I took each ordered pair (x,y) and made it (y,x)

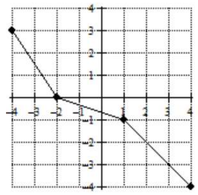
MULTIPLE CHOICE

1. For which of the following functions does $F^{-1}(x)$ exist?

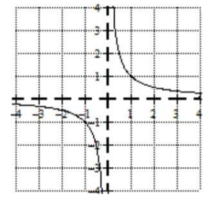
I. Fails HCT



II. Always decreasing ✓



III. PASSES HCT ✓



A. I only B. II only C. I and II only

D. II and III only E. III only

2. If the function $f(x)=|x-3|+|3-2x|$ is rewritten without absolute value bars, what is the expression by which the function is defined for x – values such that $x \geq 3$??

3   x=4

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

$y = x-3-3+2x$

$y = 3x-6$

A. $3x - 6$ B. x C. $-3x + 6$

D. $3x + 6$ E. $-x$

3. If it is known that the point (–2, –5) is a point on the graph of $y = f(x)$, then which of the following points must be on the graph of $y = f(x + 1) + 3$?

left 1 down 3

$(x,y) \to (x-1, y+3)$

$(-2,-5) \to (-2-1, -5+3)$

A. (–3, –2) B. (0, –2) C. (–3, 2)

D. (–1, –2) E. (–3, –8)

4. If the function $f(x)$ is an $\boxed{\text{even}}$ function and the point (–3, 2) is on the graph, which of the following points would also be on the graph of $f(x)$?

$f(-x) = f(x)$ (3, 2)

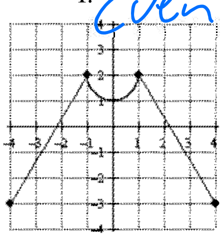
$(x,y) \Rightarrow (-x,y)$

A. (3, –2) B. (–3, –2) C. (3, 3)

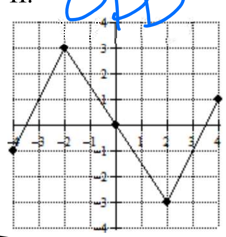
D. (2, –3) E. (3, 2)

5. Which of the following functions is an odd function?

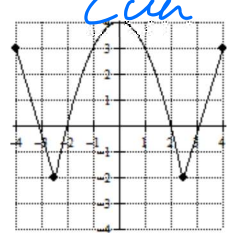
I. Even



II. ODD



III. Even



A. I and III only B. II only C. I only

D. II and III only E. III only

6. The graph of $f(x)$ is the solid line graph and $g(x)$ is the dashed line graph pictured to the right. Which of the following statements is/are true?

I. $f(x) > 0$ on the interval $(-3,6)$. False $f(x)=0$ at $x=0$

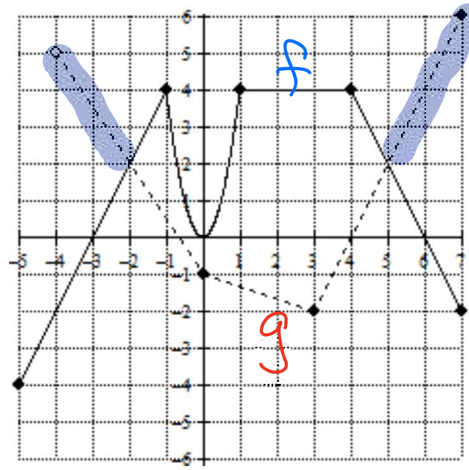
II. $g(x) > f(x)$ on the interval $(-4,-2) \cup (5,7]$. T

III. $f(g(3)) - g(f(6)) = 3$

$f(-2) - g(0) = 3$

$2 - (-1) = 3$

$3 = 3$ T



A. I and II only

B. I only

C. II only

D. II and III only

E. I, II, and III

7. The table of values to the right includes points that lie on the graph of $f(x)$, a continuous function on the interval $-4 \le x \le 4$. Which of the following statements is/are true?

x	$f(x)$
−4	3
−2	−1
−1	2
1	−2
2	1
4	−3

I. $f(x)$ is a one-to-one function. False

II. $f(f(f(2))) = -1$. T

III. The graph of $f(x)$ exhibits y – axis, reflective symmetry. False

$f(x)$ is continuous
$\therefore$ $f(x)$ must always inc. or dec., but $f(x)$ goes up and down.

A. I and III only

B. II and III only

C. I, II, and III

D. II only

E. I and II only

$f(f(f(2)))$
$= f(f(1))$
$= f(-2)$
$= -1$

8. If $f(x)$ and $g(x)$ are inverse functions of each other and it is known that $f(3) = -5$, then which of the following function values must be true?

$g(-5) = 3$

A. $f(-3) = -5$

B. $g(-3) = 5$

C. $g(-5) = 3$

D. $g(5) = -3$

E. None of these functions' values must be true.

9. Suppose that $f(x) = 2ax^2 - 3x + 2$. for what value of a is $f(-2) = -2$?

A. $a = 2$

B. $a = -\frac{5}{4}$

C. $a = -1$

D. $a = \frac{3}{4}$

E. $a = 4$

$f(x) = 2ax^2 - 3x + 2$

@ $(-2,-2)$

$-2 = 2a(-2)^2 - 3(-2) + 2$

$-2 = 8a + 6 + 2$

$-10 = 8a$

$-10/8 = a$