Review

No Calculator

8.	9.	10.	11.	12.	13.	14.
E	B	B	E	C	D	E

FREE RESPONSE – No Calculator No Calculator

Consider the one – to – one function $H(x) = -\sqrt{-x+3}$, to answer the following questions.

a. What is the domain of *H*(*x*)? Show your work, using the equation, and leave your answer in interval notation.

RADICAND ≥ 0

$-x+3 \geq 0$

$-x \geq -3$

$x \leq 3$

+1

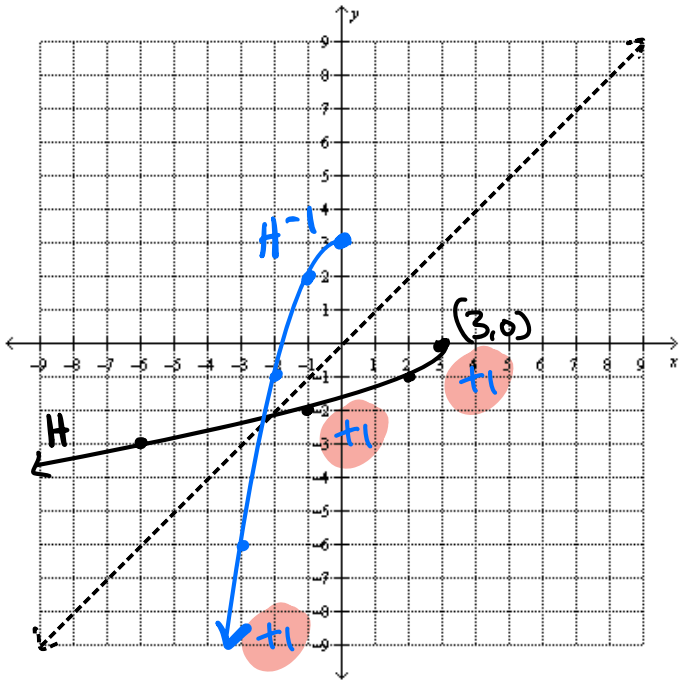
D: $(-\infty, 3]$

+1

b. Sketch an accurate graph of *H*(*x*) on the set of axes provided using at least three points.

$H = -\sqrt{-(x-3)}$

1 pt for vertex
1 pt for rest of graph



c. Sketch a graph of the inverse function, $H^{-1}(x)$.
Show and explain the numerical analysis that you did to obtain the graph of the inverse function.

H	H^{-1}
(3,0)	(0,3)
(2,-1)	(-1,2)
(-1,-2)	(-2,-1)
(-6,-3)	(-3,-6)

+1

To find points for H^{-1}, $(x,y) \rightarrow (y,x)$

d. Find the equation, with constraint, for $H^{-1}(x)$. No Calculator

Show your work and leave your answer as a quadratic in standard form, $ax^2 + bx + c$.

$x = -\sqrt{-y+3}$ +1

$(-x)^2 = (\sqrt{-y+3})^2$

$x^2 = -y + 3$

$x^2 - 3 = -y$

$-x^2 + 3 = y$

Not part of work.

b/c it's range is $(-\infty, 0]$

$H^{-1}(x) = -x^2 + 3, \quad x \leq 0$

+1 +1

E, B, B

8. Which of the following functions would have graphs that exhibit symmetry with the y-axis?

odd even

I. $f(x) = 2x|x| - 3x^2$

even even

II. $g(x) = 2x^2 - 3x^4$

odd odd

III. $h(x) = 2x^3 + 3x$

A. I and III only

B. I and II only

C. I only

D. III only

E. II only

9. What does the graph of $f(x) = \begin{cases} \frac{2}{3}x^2 + 2x, & x < -3 \\ -2x - 6, & x > -3 \end{cases}$ look like at the value $x = -3$.

$\frac{2}{3}(-3)^2 + 2(-3) = 0$

$-2(-3) - 6 = 0$

Same height, but missing point

A. The graph is defined but has a jump discontinuity at $x = -3$.

B. The graph has a point discontinuity at $x = -3$.

C. The graph is not defined but has a jump discontinuity at $x = -3$.

D. The graph is continuous at $x = -3$.

E. No conclusion can be drawn about the graph of $f(x)$ at $x = -3$.

$3x - 6 = 0$, $x = 2$

$x + 1 = 0$, $x = -1$

10. If the function $g(x) = |3x - 6| + |x + 1|$ were written as a piece-wise defined function without absolute value bars, which of the following expressions would be $g(x)$ for the interval $x \leq -1$?

A. $-2x + 7$

B. $-4x + 5$

C. $4x - 5$

D. $-4x - 5$

E. $-2x - 5$

$x = -2$

$y = -(3x - 6) + -(x + 1)$

$y = -3x + 6 - x - 1$

$y = -4x + 5$

11. Which of the following statements is/are true about the function $f(x) = -3|x| + 2x^5 + 1$?

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I. $f(x)$ is an even function.

II. II. $f(x)$ is an odd function.

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

IV. The graph of $f(x)$ exhibits origin rotational symmetry.

$f(-x) = -3|-x| + 2(-x)^5 + 1$

$f(-x) = -3|x| - 2x^5 + 1 \quad \therefore f(-x) \neq f(x)$

$f(-x) = -[3|x| + 2x^5 - 1] \quad \therefore f(-x) \neq -f(x)$

A. I and III only

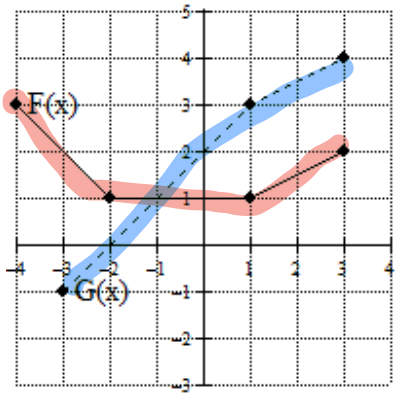
B. II and IV only

C. I and IV only

D. II and III only

E. None of the above statements are true because is neither even nor odd.

12. Which of the statements is/are true about the graph of the functions $F(x)$ and $G(x)$ pictured?



I. $F(x) < G(x)$ on the interval $(-1, 3]$. T

II. $G(F(1)) = 3$. T

III. The range of $G(x)$ is $[-1, 4]$. T

A. I and II only

B. I and III only

C. I, II and III

D. II only

E. III only

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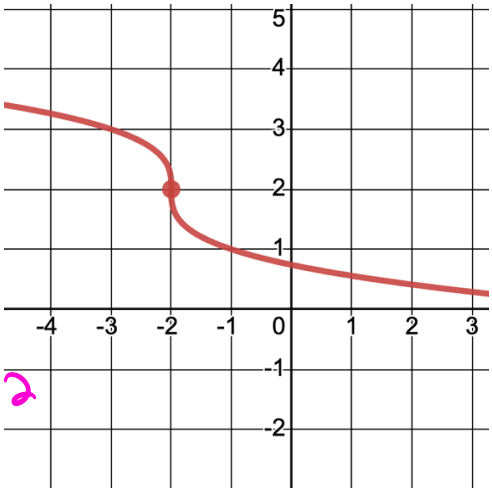
13. Which of the following functions is graphed to the right?



A. $g(x) = \sqrt[3]{x+2} + 2$

B. $g(x) = (x-2)^3 + 2$

C. $g(x) = -\sqrt[3]{x-2} + 2$

D. $g(x) = \sqrt[3]{x+2} + 2$

E. $g(x) = (x+2)^3 + 2$

$-\sqrt[3]{x+2} + 2$

14. Below are numerical or graphical representations of functions. Assuming that the numerical representations are continuous functions, for which of the functions does the inverse function NOT exist?

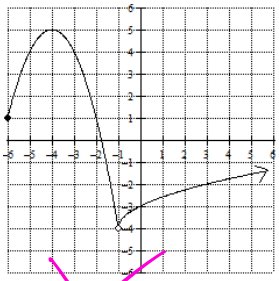
I.

x	−2	−1	0	1	2	3
$F(x)$	5	3	1	−3	−7	-13

Dec

1-1

II.



not 1-1

III.

x	−2	−1	0	1	2	3
$F(x)$	−5	3	−1	3	-4	7

up Down up Dn up

Not 1-1

A. I only

B. II only

C. I and II only

D. III only

E. II and III only