Name_____ **Date**_____ **Period**_____

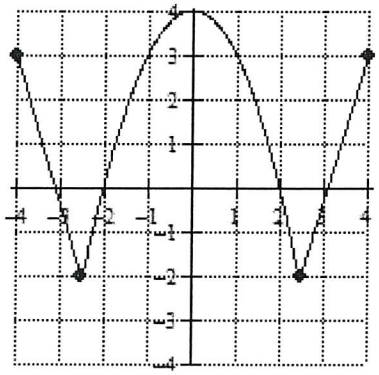
Calculator NOT Permitted

Multiple Choice

1.	
2.	
3.	
4.	
5.	
6.	
7.	

Multiple Choice	× (9/7)	
Free Response	× 1	
	Total Score out of 18	

MULTIPLE CHOICE



1. Suppose that $g(x) = (x + 1)^2 + 5$. Which of the following statements is true if $f(x)$ is the function pictured above?

   A. $g(1) < f(2.5)$

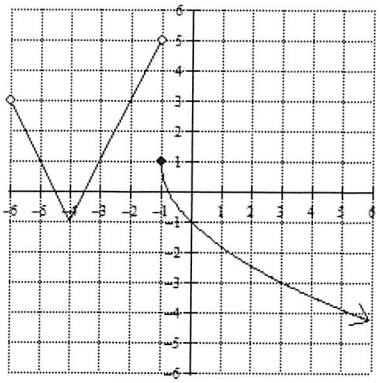
   B. $g(1) > f(2.5)$

   C. $g(1) = f(2.5)$

   D. No comparison can be made because $f(2.5)$ cannot be determined.

   E. No comparison can be made because $g(1)$ cannot be determined.

2. The graph of a function $h(x)$ is pictured to the right. If $p(x) = -2|x-3|+5$, then for what value(s) of x is the function $p(x) = h(-5)$?



A. $x = 1$ only

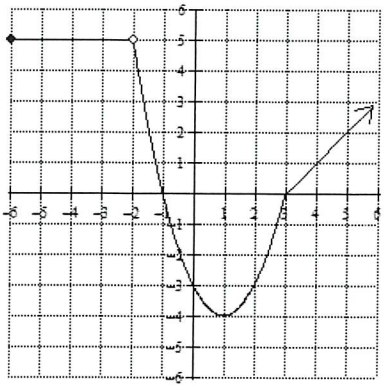
B. $x = -2$ and 2

C. $x = 2$ and 4

D. $x = -5$ and 1

E. $x = 1$ and 5

3. The graph of a function $f(x)$ is pictured to the right. Which of the following statements is/are true about the graph of $f(x)$?



I. The graph of $f(x)$ is increasing on the interval $(1, \infty)$.

II. The value of $f(x) = 5$ for all values of x on the interval $[-6, -2]$.

III. The domain of $f(x)$ is $[-6,-2)\cup(-2,\infty)$.

A. I and III only

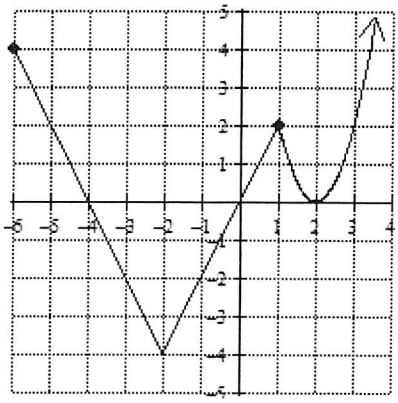
B. III only

C. I only

D. II and III only

E. I, II and III

4. The graph of $f(x)$ is shown to the right. Which of the following intervals correctly identifies all values of x for which $f(x) > 0$?



A. $[-6,-4)\cup(0,\infty)$

B. $(-6,-4)\cup(0,\infty)$

C. $[-6,-4)\cup(0,2)\cup(2,\infty)$

D. $(-6,-4)\cup[0,\infty)$

E. $(-6,-4)\cup(0,2)\cup(2,\infty)$

5. Use the table of values to the right to determine value of $[2 \cdot f(3) + g(-1)]$.

A. 6

B. −6

C. 1

D. 3

E. −2

x	$f(x)$	$g(x)$
−2	−2	3
−1	2	3
2	0	4
3	−1	3

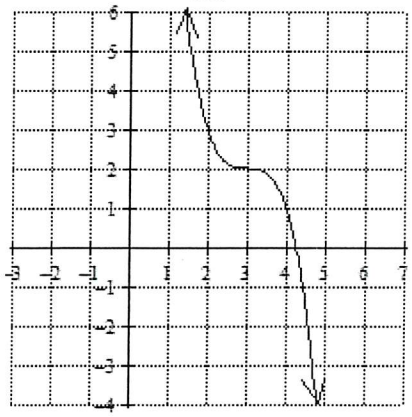
6. If $g(x) = \sqrt{x+2} + 2$, for what value(s) of x is $g(x) = 5$?

A. $x = 7$ B. $x = 4$ C. $x = 8$

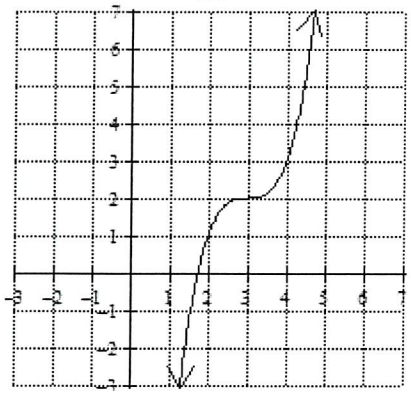
D. $x = 4.646$ E. No value of x will make $g(x) = 5$.

7. Which of the following graphs is the graph of the function $g(x) = -(x-3)^3 + 2$?

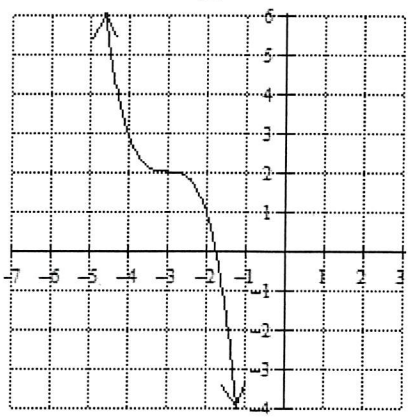
A.



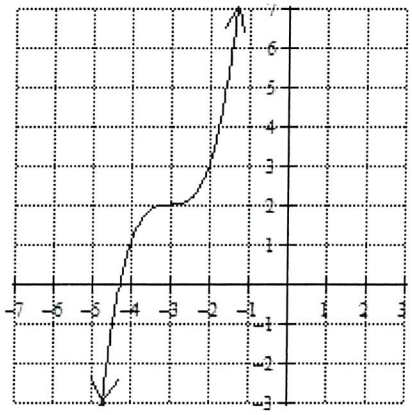
B.



C.



D.

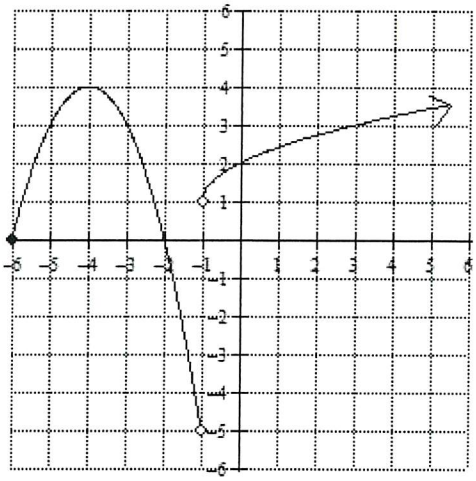


E.

None of these graphs are correct.

FREE RESPONSE

Consider the graph of the piece-wise defined function, $h(x)$, pictured to the right.



a. If $h(x) \geq 0$, then explain in words what must be true graphically. Then, state the value(s) of x for which $h(x) \geq 0$.

b. Find the value(s) of x for which $h(x) = 3$. Using the graph, explain your reasoning.

c. On the grid above, graph the function $f(x) = -|x+2|+4$. Then, state the values of x for which $f(x) = h(x)$. Explain how you determined the values of x. If a value of x has been approximated, please denote that using proper notation.

d. If $p(x) = 3ax^2 - 2x$, then for what value(s) of a does $p(-1) = [2 \cdot h(-5) + h(0)]$. Show your work.