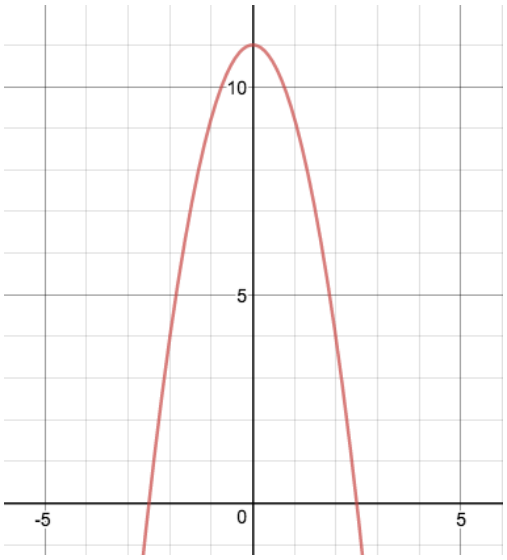
Math 3: Multiple Representations Name: _____ #_____

1. Two objects are dropped downward at the same time from the top of a building. For both functions, t represents time in seconds and the height is represented in feet. The functions are shown below. Function g(t) is shown as a graph and function s(t) is shown as a table. Use these to answer the following questions:

   a) Which object was dropped from a greater height? Explain your answer.

   b) Which object hit the ground first? Explain your answer.

   c) Which object fell at a faster rate (in ft/sec)? Explain your answer.



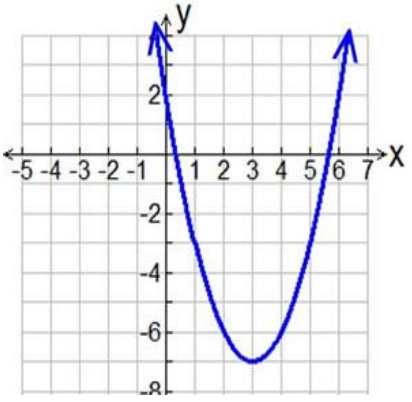
t	*s(t)*
0	20
2.5	15
3.5	10
4.3	5
5	0

2. Given the functions f(x) and g(x), which function has the greatest average rate of change over the interval [-1, 1]? Show and explain your work.

$$f(x) = 3x^3 - 2x^2 + 4$$

x	g(x)
-2	1.25
-1	2.5
0	5
1	10
2	20

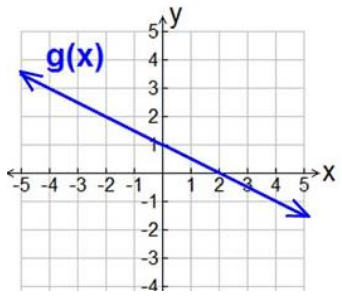
3. Which of the following functions has a minimum value less than the one shown in the graph?
   a) $m(x) = x^2 - 2x - 10$
   b) $g(x) = x^2 - 6x + 7$
   c) $h(x) = |x + 3| - 6$
   d) $r(x) = |x - 8| + 2$



College Prep Only:

4. Which of the following statements is true about the functions f(x) and g(x) shown below?

x	f (x)
-1	5
0	3
1	1
2	-1



a) G(x) has a greater rate of change than f(x).
b) F(x) has a greater rate of change than g(x).
c) Both functions have the same rate of change.
d) There is insufficient information to determine the rate of change.

Honors Only:

5. Which of the following statements is true about the functions p(x) and m(x) shown below?

x	-3	-2	-1	0	1	2	3	4	5
$m(x)$	-7	0	5	8	9	8	5	0	-7

$$p(x) = -x^2 - x + 6$$

a) The function p(x) has a greater maximum value than m(x).
b) The sum of the roots of m(x)=0 is greater than the sum of the roots of p(x) = 0.
c) The y-intercept of p(x) is greater than the y-intercept of m(x).
d) Over the interval [-1, 1], the average rate of change for m(x) is less than the rate of change for p(x).