

Name \_\_\_\_\_

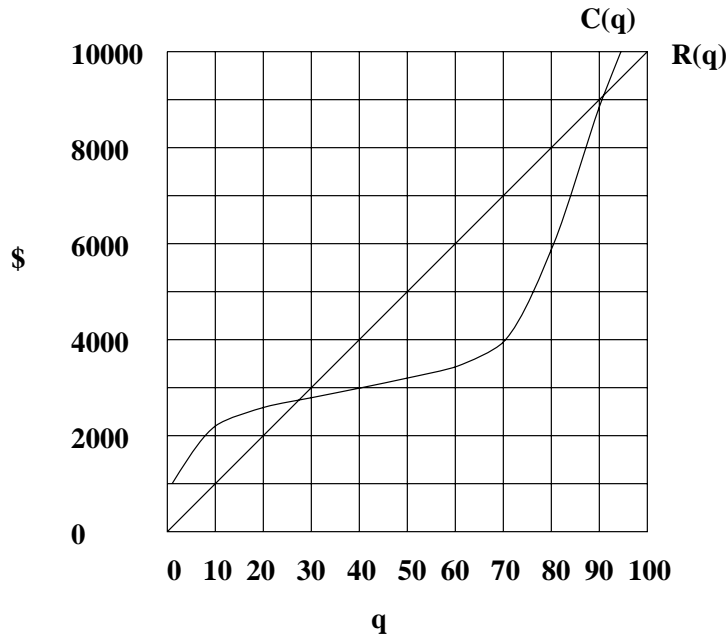
You must show all of your work to receive credit for a correct answer. You are not allowed to borrow another student's calculator during the quiz.

1. (6 points) The following table of values should suggest whether the first and second derivatives are **zero**, **positive**, or **negative** for each of the four functions of  $t$ . Fill in the blanks with the appropriate choice.

$t$	$f(t)$	$g(t)$	$h(t)$	$p(t)$
0	200	7	-100	3
5	90	10	-50	3
10	51	13	-30	3
15	42	16	-20	3

(a)  $f'(t)$  is \_\_\_\_\_(b)  $f''(t)$  is \_\_\_\_\_(c)  $g'(t)$  is \_\_\_\_\_(d)  $g''(t)$  is \_\_\_\_\_(e)  $h'(t)$  is \_\_\_\_\_(f)  $h''(t)$  is \_\_\_\_\_(g)  $p'(t)$  is \_\_\_\_\_(h)  $p''(t)$  is \_\_\_\_\_

2. (4 points) The cost and revenue functions for the Little Genius Kindergarten Chemistry Set Company are graphed below.



- (a) At a production level of 80 chemistry sets, which is greater — the marginal revenue or the marginal cost?
- (b) If current production is at 50 sets, should the company increase production to 51 sets? Explain.
- (c) If current production is at 20 sets, should the company increase production to 21 sets? Explain.

- (d) How many chemistry sets are produced and sold when the company attains its maximum profit? What is the dollar amount of this profit?
- (e) There are two different values for  $q$  where the marginal revenue is equal to the marginal cost. Use the graph to approximate these values of  $q$ . Explain why the company cares about each of these values of  $q$ .