

Pledge:

9/28/2005  
Dr. Lunsford

MATH261 Calculus I  
Quiz 6

Name: \_\_\_\_\_  
(20 Points Total)

I. Let  $f(x) = 2 + 3x - 4x^2$ . Use the limit definition of the derivative function to show that  $f'(x) = 3 - 8x$ . Neatly show all work. (9 points)

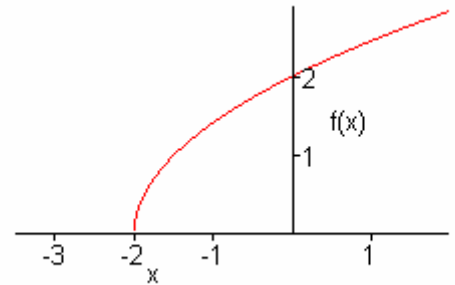
II. If  $f(x) = \sqrt{4 + 2x}$  then  $f'(x) = \frac{1}{\sqrt{4 + 2x}}$ . Below you are given a graph of  $f$ .

Please answer the following questions.

(a) Find the equation of the tangent line to  $f$  at  $x = -1$ .

Accurately graph this line (i.e. show the coordinates of the  $x$  and  $y$  intercepts of the line) on the graph below.

Clearly indicate this line on the graph. (5 points)



(b) If  $f$  is the position of a particle (in feet, moving along a straight path) as a function of time,  $x$ , in seconds, then how fast is the particle moving at  $x = 0$  seconds? Graph the line whose slope represents this velocity. Clearly indicate this line on the graph. (4 points)

III. Below you are given the graph of a function  $f$ . Which of the other three graphs best represents the graph of  $f'$ ? Clearly indicate your answer. (2 points)

