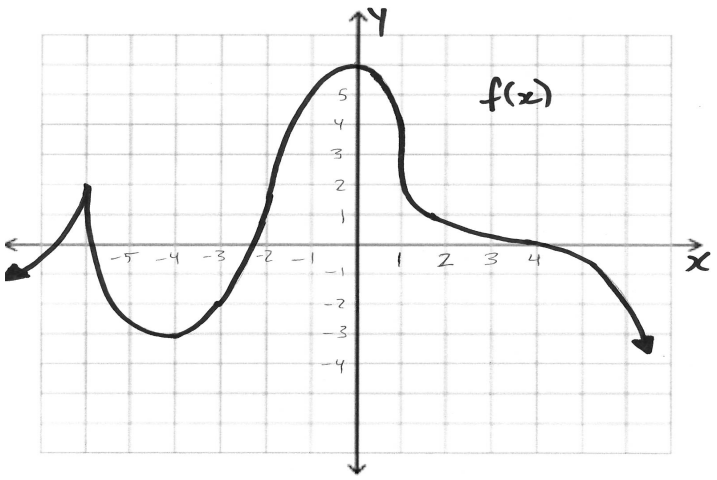
Quiz 4A, Business Calculus

Spring 2017 - Dr. Graham-Squire

Name: _____

1. (3 points) For the following graph of $f(x)$, answer the questions below. If no such thing exists, write NONE as your answer.



   (a) Find one interval where f is decreasing.

   (b) Find one interval where f is concave up.

   (c) Find the (x, y)-coordinates of a local maximum point.

   (d) Find the (x, y)-coordinates of an inflection point.

   (e) Find the absolute maximum and absolute minimum on the interval $[-5, -1]$

2. (4 points) Helen is at the top of a 500 foot cliff overlooking the ocean, watching a boat on the water coming toward her. Let x be the diagonal distance between Helen and the boat, and y be the distance from the boat to the bottom of the cliff. Suppose the boat is moving at a speed of 100 feet/minute. Calculate the speed at which x is changing at exactly the point when the boat is 2000 feet away from the bottom of the cliff.

3. (3 points) Suppose a given function f has the property that

$$f'(x) = x(x+2)^2(x-3) \qquad \textit{and} \qquad f''(x) = (x-1)^2(x+2)$$

You should not calculate those derivatives, just accept them as correct.

(a) Find the interval(s) where f is increasing (if any exist).
(b) Find the interval(s) where f is concave down (if any exist).