

Math 151 Quiz #8
November 17, 2009

Name: _____

Simplify your answers. Show all work on a separate paper stapled to this sheet. No calculators permitted.

1. (5 pts.) Two cars are traveling away from an intersection*. One car travels north at a constant speed of 40 mph and the other travels east at a constant speed of 60 mph.

At what rate is the **distance between them** increasing when the northbound car is 3 miles from the starting point and the eastbound car is 4 miles from the starting point?

*Note: The cars do not necessarily leave the intersection at the same time.

2. Consider the function $f(x) = 1 - 3 \sin x + 5x \cdot e^x$

(a) (3 pts.) Find the linearization of $f(x)$ at $a = 0$.

(b) (2 pts.) Use linear approximation to estimate $f(-0.1)$. Simplify your answer as much as possible.