

Name: _____

Panther ID: _____

Take home Quiz 3

Calculus I

Fall 2013

1. (4 pts) Find the derivative of each of the functions $y = e^{\sin(x^e)}$ and $y = x^{(e^{\sin x})}$.

2. (6 pts) A plane traveling horizontally at 80 m/s over flat ground at an elevation of 3000 m releases an emergency packet. The trajectory of the packet is given by

$$x = 80t, \quad y = -4.9t^2 + 3000, \quad \text{for } t \geq 0,$$

where the origin is the point on the ground directly beneath the plane at the moment of the release, and t is the time in seconds since the moment of release.

- (a) Graph the trajectory of the packet and find the coordinates of the point where the packet lands.
- (b) Find dx/dt , dy/dt , explain their practical meaning and why the formulas you got for each of them make sense.
- (c) Find the angle at which the released package hits the ground.