Math 20a Quiz 2 March 6, 2012

Instructions: Read the problems carefully before you start thinking or writing. No calculators allowed; leave any quantities such as $0.4e^5$ without evaluating numerically. There are a total of 20 points.

1. [12 points] (a) Find an equation of the tangent plane to the graph of the function $z = f(x, y) = e^{xy^2}$ at the point $P(0.5, 2, e^2)$.
   (b) Find the linearization $L$ of $f$ at the point $P$.
   (c) Use your answer to (b) to estimate $f(0.4, 2.05)$.

2. [8 points] Evaluate the following limit, or show that it does not exist:

$$\lim_{(x,y)\to(0,0)} \frac{x^2}{x^2 + y^2}$$