Math 6A Quiz 3

Name:_____ Section Time:_____

Complete the following problems, making sure to SHOW ALL WORK. If you're stuck on something, CLEARLY EXPLAINING what you do know will get you partial credit!

1. Compute the derivatives Df and Dg for the following functions. Note that both of these derivatives are Jacobians, but only one is a gradient.

   (a) $f(x, y, z) = xe^{xy} + \sin(y)$

   (b) $g(x, y) = \left\langle xy + 2y, 2xy^2, \dfrac{x^2}{y^2} \right\rangle$

2. Find the derivative $D_{\vec{u}}f(x, y, z)$ of the function f in the previous problem in the direction of the vector $\vec{u} = \langle -1, 0, 3 \rangle$.