Graded by: _____ Score: _____ ID: _____

WORKSHEET 5 - DUE 10/5

MATH 2110Q – Fall 2015
Professor Hohn

You must show all of your work to receive full credit!

1. Compute $\frac{\partial f}{\partial x}$, $\frac{\partial f}{\partial y}$, $\frac{\partial^2 f}{\partial x^2}$, $\frac{\partial^2 f}{\partial x \partial y}$, $\frac{\partial^2 f}{\partial y \partial x}$, and $\frac{\partial^2 f}{\partial y^2}$ for the following functions at the indicated point.
   (a) $f(x, y) = xy; (1, 1)$

   (b) $f(x, y) = \frac{x}{y}; (1, 1)$

2. Compute $\frac{\partial f}{\partial x}$, $\frac{\partial f}{\partial y}$, and $\frac{\partial f}{\partial z}$ for the following functions at the indicated point.

(a) $f(x, y, z) = \sqrt{x^2 + y^2 + z^2}; (3, 0, 4)$

(b) $f(x, y, z) = \cos(xy^2) + e^{3xyz}; (\pi, 1, 1)$

3. Compute $\dfrac{\partial u}{\partial x}$, $\dfrac{\partial u}{\partial y}$, and $\dfrac{\partial u}{\partial z}$ for the following functions at the indicated point.

(a) $u = e^{xyz}(xy + xz)$

(b) $u = e^{x}\cos(yz^2)$

4. Compute

$$\frac{\partial}{\partial \lambda}\left(\frac{\cos(\lambda\mu)}{1+\lambda^2+\mu^2}\right).$$