

Collected Assignment on Sections 14.3 and 14.4

Math 232 Section 1

Due: March 31, 2006 10:10AM

Name (Print): _____

Remember that you are not to discuss this homework with anyone other than Prof. King. Be sure to justify your answers. Use full sentences.

1. Use the **definition** of partial derivatives to find f_y if $f(x, y) = 4\sqrt{7y - x^2}$.

2. Find f_y if $f(x, y) = \frac{3x^2y^7 - y^2}{15xy - 8}$.

3. Use Clairaut's Theorem to show that if the third-order partial derivatives of f are continuous, then $f_{xyz} = f_{yxz} = f_{zyx}$.

4. Find the value of $\frac{\partial x}{\partial z}$ at the point $(1,-1,-3)$ if the equation $xz + y \ln x - x^2 + 4 = 0$ defines x as a function of the two independent variables y and z and the partial derivative exists. (Make sure you are clear that x is a function of y and z .)

5. Using the **definition** of differentiability, show that $f(x, y) = 4x^2y + 7xy^2$ is differentiable everywhere. (Note that there is more than one correct solution.)

6. Problem 14 from section 14.4 on page 930.