

Name: _____

Math 251 Calculus III – Crawford

Quiz 3
29 March 2017

Books, notes (in any form), and calculators are not allowed. *Show all your work.* Good Luck!

1. (4 pts) Find the limit, if it exists, or show that the limit does not exist.

$$\lim_{(x,y) \rightarrow (0,0)} \frac{x^2 y}{x^4 + y^2}$$

2. (4 pts) Use polar coordinates to find the limit.

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

3. (7 pts) Given $f(x, y) = \ln(x^2y + 3x)$,

(a). Find f_x .

(b). Find f_{xy} .

[Do not simplify.]