

Math 53 - Multivariable Calculus

Quiz # 5

February 24th, 2012

Exercise 1. Find and sketch the DOMAIN of the function f when $f(x, y) = \frac{\sqrt{y-x^2}}{1-x^2}$.

Exercise 2. Find the limit or prove that it does not exist for $\lim_{(x,y) \rightarrow (0,0)} \frac{xy}{\sqrt{x^2 + y^2}}$.

Exercise 3. State, with proof, the number of functions f that have partial derivatives $f_x(x, y) = x + 4y$ and $f_y(x, y) = 3x - y$. (Hint: your reasoning should NOT involve solving any differential equations.)