King Fahd University of Petroleum and Minerals

MATH 201 QUIZ #4 Term 161

Name:	Serial:	ID:

Q1. Find and sketch the domain of $f(x,y) = \ln(16 - 4x^2 - 4y^2)$. Find the range of f.

Q2. Find the limit, if it exists, or show that the limit does not exist

(a) $\lim\limits_{(x,y)\to(0,0)} \dfrac{xy^3}{x^2 + y^6}$

(b) $\lim\limits_{(x,y)\to(0,0)} \dfrac{x^3 + y^3}{x^2 + y^2}$

Q3 Find all the second partial derivatives of

$$z = \arctan\left(\frac{x + y}{1 - xy}\right)$$

Q4 Find the linear approximation of $f(x, y, z) = \sqrt{x^2 + y^2 + z^2}$ at $(3,2,6)$ and use it to approximate the number $\sqrt{(3.02)^2 + (1.97)^2 + (5.99)^2}$