Name:
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MAC 2313.8326
Cyr

Quiz 4
You must show all work to receive full credit!!

Problem 1. Let $f(x, y) = \sqrt{9 - (x^2 + y^2)}$.
(a) (2 pts) Find the domain of $f(x, y)$.

(b) (2 pts) Find the range of $f(x, y)$ (write your answer in interval notation).

(c) (2 pts) Write an equation for the level curve $f(x, y) = \sqrt{5}$, and use it to describe the graph of the level curve.

Problem 2. Let $g(x, y) = \dfrac{x^3 y}{x^4 + y^3}$.
(a) (1 pt) Evaluate $\lim\limits_{(x,y)\to(0,0)} g(x, y)$ along the line $y = x$.

(b) (1 pt) Evaluate $\lim_{(x,y)\to(0,0)} g(x,y)$ along the curve $y = x^2$.

(c) (2 pts) What can you conclude about $\lim_{(x,y)\to(0,0)} g(x,y)$? Explain your answer.