Math 201

Quiz 4

14/ 11/ 2012

Name: **ID #**

Q.1 (3 points): Sketch the surface given by $z = \cos x$, $0 \leq x \leq \pi/2$, $0 \leq y \leq 2$.

Q.2 (6 points):

Given the function $f(x, y) = \sqrt{16 - x^2 - y^2} - 3$.

a. Find the domain and range of f

b. Sketch the graph of f

c. Sketch in the xy-plane the level curves corresponding to $f(x, y) = -1$ and $f(x, y) = 0$

Q.3 (2 points):
Find the domain and range of

$$f(x, y, z) = \frac{x}{(y + z)^2}$$

Q.4 (4 points):
Use polar coordinates to show that $\lim_{(x,y)\to(0,0)} \frac{xy}{\sqrt{x^2+y^2}} = 0$

Q.4 (5 points):
Show that

$$f(x,y) = \begin{cases} \frac{x^2 y}{2x^2+y^2}, & (x,y) \neq (0,0) \\ 0, & (x,y) = (0,0) \end{cases}$$

is continuous at $(0,0)$.