Quiz 7   Calculus 3   11/21/2011

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Parametrize and give bounds for the portion of the paraboloid $z = x^2 + y^2$ lying above the rectangle with vertices $(0,0)$, $(2,0)$, $(2,3)$, and $(0,3)$.

$$y(u,v) = \underline{v}$$
$$x(u,v) = \underline{u}$$
$$z(u,v) = \underline{u^2 + v^2}$$

Wild!

$$0 \le v \le 3, \quad 0 \le u \le 2$$

2. Parametrize and give bounds for the portion of the cylinder with radius 3 centered around the x-axis between $x = 0$ and $x = 1$.

$$x(u,v) = u$$
$$y(u,v) = 3\sin v$$
$$z(u,v) = 3\cos v$$

Wacky!

$$0 \le u \le 1 \qquad\qquad 0 \le v \le 2\pi$$

3. Parametrize and give bounds for a sphere with radius 2, centered at the origin.

$$z(u,v) = 2\cos v$$
$$y(u,v) = 2\sin v \sin u$$
$$x(u,v) = 2\sin v \cos u$$

Zany!

$$0 \le v \le \pi \qquad\qquad 0 \le u \le 2\pi$$