Math 2153, Quiz #6, Spring 2014 Name KEY

Instructions: Show all work. Use exact answers unless specifically asked to round. Be sure to complete all parts of each question.

1. Determine what kind of surface is being modeled with the parametric function $\vec{r}(u,v) = u\cos v\,\hat{\imath} + u\sin v\,\hat{\jmath} + u\hat{k}$. Describe the surface in as much detail as possible or sketch the graph.

$x = u\cos v$

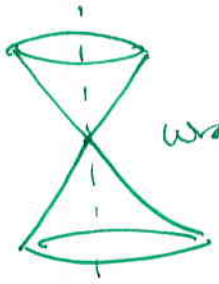
$y = u\sin v$

$x^2 + y^2 = u^2$

$z = u$

$z^2 = x^2 + y^2$

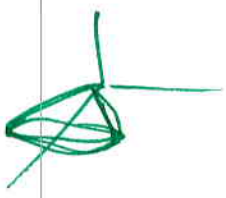
Cone



wrapped around z-axis
both halves

2. Write a vector-valued function for the surface described by $x = \sqrt{16y^2 + z^2}$.

$\vec{r}(u,v) = \left(\sqrt{16u^2 + v^2}\right)\hat{\imath} + u\hat{\jmath} + v\hat{k}$



"top" of elliptic cone wrapped around x-axis

3. Find the three first partial derivatives for $f(x,y,z) = e^{-xy}\sin(yz)$.

$f_x = -ye^{-xy}\sin(yz)$

$f_y = -xe^{-xy}\sin(yz) + e^{-xy}z\cos(yz)$

$f_z = ye^{-xy}\cos(yz)$