Math 13 - Winter 2014
Homework 7
Due Wednesday, 26 Feb. 2014.

- Except for problems that are stated explicitly, all problems are from Stewart Multivariable Calculus, 7th Edition.
- Please show all of your work (writing a list of answers is not sufficient).
- Please indicate the people you worked with.
- Please staple your pages together.

1. Section 16.3 # 28
2. Section 16.4 #27
3. Match the equations with the graphs in Figures 1, 2, 3, and 4 on the next 4 pages. For each, determine which families of grid curves have u constant, and which have v constant.
   (a) $\mathbf{r}(u, v) = \cos v\mathbf{i} + \sin(v)\mathbf{j} + u\mathbf{k}$
   (b) $\mathbf{r}(u, v) = u\cos v\mathbf{i} + u\sin(v)\mathbf{j} + u\mathbf{k}$
   (c) $\mathbf{r}(u, v) = u\cos v\mathbf{i} + u\sin(v)\mathbf{j} + v\mathbf{k}$
   (d) $\mathbf{r}(u, v) = u^3\mathbf{i} + u\sin(v)\mathbf{j} + u\cos v\mathbf{k}$
4. Find an equation of the tangent plane to the parametric surface $\mathbf{r}(u, v) = u^2\mathbf{i} + (u - v^2)\mathbf{j} + v^2\mathbf{k}$ at the point $(1, 0, 1)$.
5. One parametric representation for the part of the cylinder $x^2 + z^2 = a^2$ that lies in the cylinder $x^2 + y^2 = a^2$ and in the first octant is $\mathbf{r}(u, v) = u\mathbf{i} + v\mathbf{j} + \sqrt{a^2 - u^2}\mathbf{k}$, with $0 \leq u^2 + v^2 \leq a^2$. Find another parameterization for the same surface.
6. Section 16.6 # 64(a).

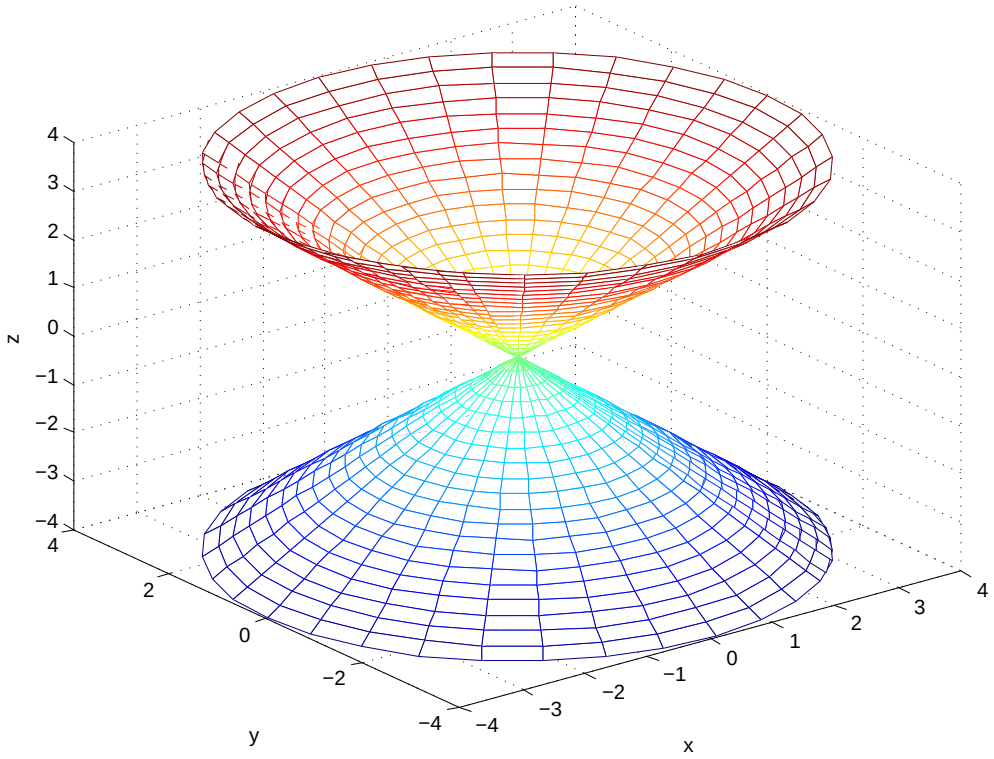

Figure 1

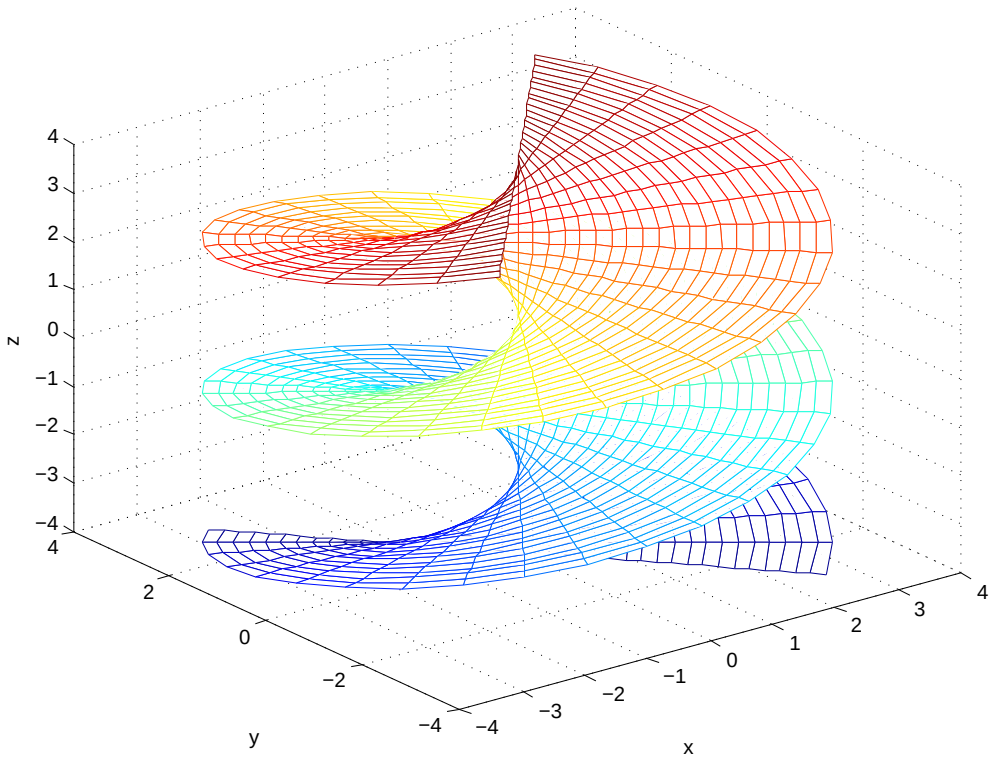

Figure 2

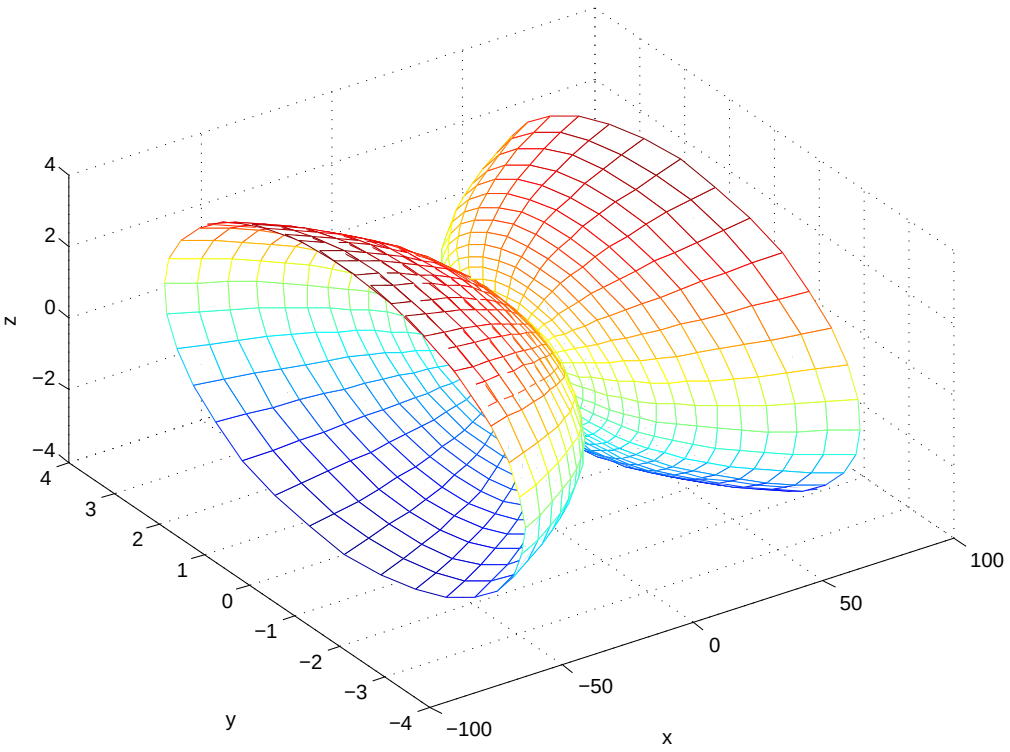

Figure 3

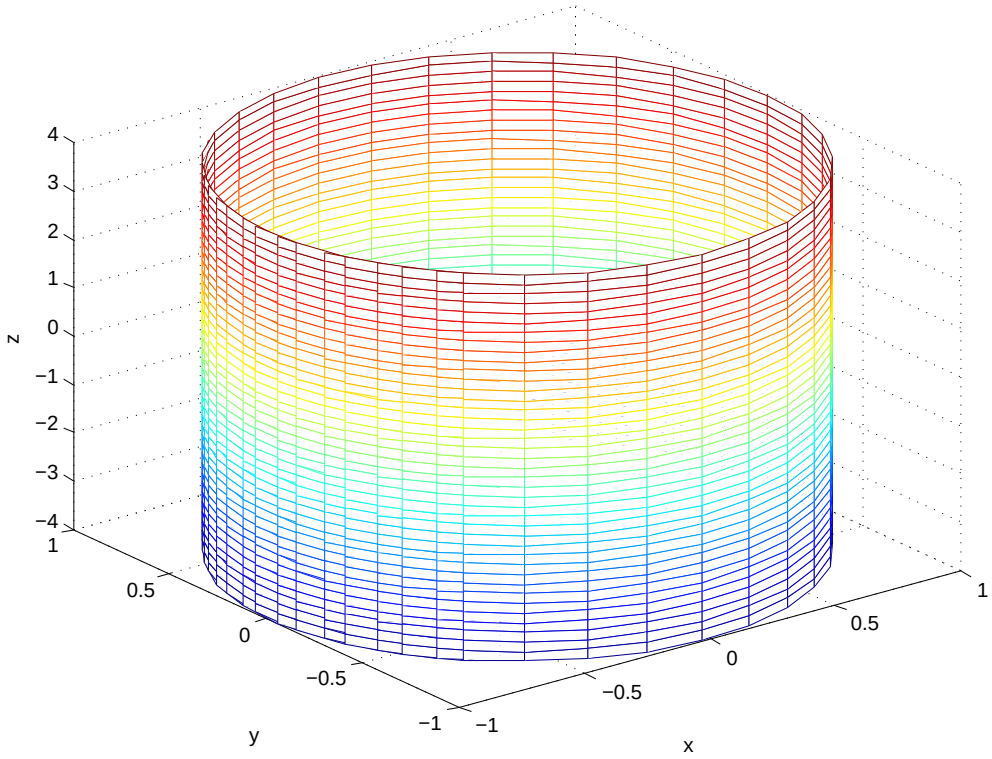

Figure 4