Name _____

Homework 4
Section 12.5

1. (5) Describe the level set of $F(x, y, z) = xyz$ containing the point $(4, 0, 3)$.

2. (6) Describe the level surfaces of $f(x, y, z) = e^{-x^2-y^2-z^2}$. For what values of 'c' do level surfaces exist?

3. (5) Is it possible for a level curve of a function of three variables, $f(x, y, z)$ to consist of a single point? If it is possible, provide an example. If it is not possible, explain why not.

4. (4) Identify the surfaces given by the following equations. [Hint: pg 671]

   (a) $\frac{x^2}{4} + \left(\frac{y}{3}\right)^2 = \frac{z^2}{6}$

   (b) $\frac{x^2}{2} + \frac{z^2}{3} = 1 - y^2$

   (c) $2x^2 + 3y^2 - z^2 = 6$

   (d) $1 = \frac{z^2}{8} - \frac{y^2}{3} - \frac{x^2}{11}$