Problem Set for Week 5

The work handed in should be entirely your own. You can consult Stewart and/or the class notes but nothing else. To receive full credit, justify your answer in a clear and logical way. Due Feb 18.

Reading. This is the most important part of the homework:

- Review Chapters 12–14 carefully. The first midterm will cover these chapters.
- Read Sections 15.1–15.2 of the textbook carefully.

1. Consider the surface $S : yz + x \ln y = z^2$. Let $P : (1, 1, 1)$ be a point on the surface.
   - Near the point P, show that the surface S be written as the graph of a function $z = z(x, y)$.
   - Evaluate $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$ at P?
   - Use Equation (7) on page 930 of the textbook to check your answer in the second part.
2. Section 15.1 Exercise 12.
3. Section 15.2 Exercises 4, 10, 18, 28.