Homework #5
Due October 3, 2014

Reading: Chapters 4 and 5 of Reif.

1. Reif 4.1, p150.
2. Reif 4.2, p150.
3. Reif 4.3, p150.
4. Reif 4.4, p150.
5. Reif 4.5, p151.

6. Schroeder 1.45, p31. As an illustration of why it matters which variables you hold fixed when taking partial derivatives, consider the following mathematical example. Let $w = xy$ and $x = yz$.
(a) Write w purely in terms of x and z, and then purely in terms of y and z.
(b) Compute the partial derivatives

$$\left(\frac{\partial w}{\partial x}\right)_y \quad \text{and} \quad \left(\frac{\partial w}{\partial x}\right)_z,$$

and show that they are not equal. (Hint: To compute $(\partial w/\partial x)_y$, use a formula for w in terms of x and y, not z. Similarly, compute $(\partial w/\partial x)_z$ from a formula for w in terms of only x and z.)
(c) Compute the other four partial derivatives of w (two each with respect to y and z), and show that it matters which variable is held fixed.