Homework 5, due Nov. 8, 2007

1. Problem 7.1 in book.

2. Problem 7.3 in book. (Note: the answer given in the back for part c is incorrect!)

3. Problem 7.4 in book.

4. A system initially has $U_i = 3 \times 10^5 J$, $V_i = 1m^3$, and $S_i = 10^3 J/K$. It undergoes a process, surrounded by the outside environment, which is at pressure $P_0 = 1atm$ and $T_0 = 300K$. In the final state, the system has internal energy $U_f = 2 \times 10^5 J$, $V_f = 2m^3$, and $S_f = 2 \times 10^3 J/K$. What is the maximum work that this system can do (without violating one of the laws of thermodynamics)?

5. Problem 8-4 in book.

6. Problem 8-7 in book.

7. Problem 8-13 in book.

Before the midterm, also do problems 9-2 and 9-8 in the book, but you don't need to turn them in.