

# Physics 450: Problem Set #6

Department of Physics and Astronomy  
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Due Wednesday, October 13, 2010, 12:00 pm (in class)

- All problems are from the text: Daniel V. Schroeder, An Introduction to Thermal Physics, Addison Wesley Longman, 1999;
  - Please read chapter 2;
1. Problem 2.26;
  2. Problem 2.30 (a), (b), (c);
  3. Problem 2.37; (Make sure you read page 79, "Entropy of Mixing".)
  4. Suppose we have a system which consists of two weakly interacting ideal gas subsystems  $A$  and  $B$  with fixed volumes  $V_A$  and  $V_B$ , respectively. The fixed number of particles in each subsystem is  $N_A$  and  $N_B$ , respectively. If the total energy is  $U$ , following the same reasoning in §2.5 to compute how much energy the subsystem  $A$  has when the multiplicity of the system is a maximum.