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**PROBLEM SET 6**

**Reading:** Chapter 7 (sections 7.1–7.10) in Reif.

**Problems:**

1. Reif 7.1
2. Reif 7.2
3. Reif 7.5
4. Reif 7.7
5. Reif 7.14
6. In class (see notes for lecture 10) we considered a system of  $N$  noninteracting spins at temperature  $T$  in an external magnetic field  $H$  pointing along the  $z$  axis. These spins have total angular momentum  $J = 1/2$  and  $g = 2$ . What is the entropy  $S$  of the system as a function of  $T$  and  $H$ ?