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PROBLEM SET 7

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

1. Reif 6.2
2. Reif 6.3
3. Reif 7.4
4. Reif 7.6
5. Reif 7.7
6. Reif 7.14
7. 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  $H$ ?