

Chem. 2440 HW # 4

Assigned Feb. 10, due Feb 23.

1. Prove that the probability distribution p_i that maximizes the entropy for die rolls subject to a constant value of the second moment $\langle i^2 \rangle$ is Gaussian. (Here i refers to the numerical values on the faces of the die.)
2. Problem 6-21 from McQuarrie
3. Problem 4-9 from McQuarrie.
4. For a thermodynamic system with three states you measure the populations $p_1=0.90$, $p_2=0.09$, and $p_3= 0.01$ at $T = 300$ K. What are the energies of the 2nd and third states relative to the ground (1) state?