Exercises in Statistical Mechanics

Based on course by Doron Cohen, has to be proofed
Department of Physics, Ben-Gurion University, Beer-Sheva 84105, Israel

This exercises pool is intended for a graduate course in "statistical mechanics". Some of the problems are original, while other were assembled from various undocumented sources. In particular some problems originate from exams that were written by B. Horovitz (BGU), S. Fishman (Technion), and D. Cohen (BGU).

═══ [Exercise 1045]

Entropy, mixing of two gases

Consider mixing of two gases with initial different temperatures, T_1, T_2, particle numbers N_1, N_2 and volumes V_1, V_2, respectively. Evaluate the mixing entropy (i.e. the change of entropy upon mixing) in two cases: (i) the gases are identical, (ii) the gases are distinct (but have equal mass). Show that the mixing entropy in case (ii) is larger and argue for the reason.