1 Boltzmann Factor Practice Question

A lithium nucleus has four independent spin orientations, conventionally labelled by the quantum numbers m = -3/2, -1/2, 1/2, 3/2. In a magnetic field B, the energies of these four states are $E = -m\mu B$, where the constant μ is 1.03×10^{-7} eV/T. In the Purcell-Pound experiment, the maximum field strength was 0.63 T and the temperature was 300 K. Calculate the probabilities of a lithium nucleus being in each of its four spin states under these conditions.