

Problem Set #3

Physics 436

Friday, 04 February 2022

The following problems come from Schroeder's *An Introduction to Thermal Physics*:

- Problem 1.47 on page 33 (*10 points*) \Rightarrow This is a problem you most likely did (or will do) in a chemistry course.
- Problem 1.50 on pages 35-36 (*20 points*) \Rightarrow You compute a lot of numbers in this problem. Make use of the table on pages 404-405.
- Problem 2.3 on page 52 (*15 points*) \Rightarrow Use *Mathematica* (or some other software) for this problem. The first six parts of the problem are trivial. Making the graph in part (g) is the only part of this problem that takes more than a minute to do.
- Problem 2.7 on page 55 (*10 points*) \Rightarrow This is a very simple problem to test that you understand the multiplicity proof given at the top of page 55.
- Problem 2.10 on page 60 (*20 points*) \Rightarrow Feel free to use *Excel* if you like that software. I recommend, however, doing the entire problem in *Mathematica*. Turn in a table with 101 entries like the one given in Figure 2.5 on page 59. If you really want to go crazy with this problem, I will give you *10 extra credit points* if you make plots of the multiplicity as a function of q_A and the probability as a function of q_A .

Due date: **Friday, 11 February 2022**