

Problem Set #1

Physics 436

Monday, 24 January 2022

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

- Problem 1.1 on page 5 (*10 points*) \Rightarrow You probably did this problem in junior high school. Let's start simple! Do a short derivation; don't simply give a known result.
- Problem 1.2 on page 5 (*10 points*) \Rightarrow You may not have heard of the Rankine temperature scale before. It does for the Fahrenheit scale what kelvin does for the Celsius scale.
- Problem 1.14 on page 8 (*5 points*) \Rightarrow Use the periodic table on page 403 for this very easy problem.
- Problem 1.16 on pages 8-9 (*15 points*) \Rightarrow Call the slab mass M in part (a). You will need the symbol m later. For part (d), begin by determining a numerical value for the *characteristic length* (i.e. the length where the pressure drops to $1/e$ of its $z = 0$ value). Find that length in both meters and miles. Use $T = 280$ K as an average temperature for all locations. Find the pressure at each of the four locations to *two* significant digits. You may have used the result of this problem in the *Computational Physics* course.

Due date: **Friday, 28 January 2022**