

Problem Set 7
(due Monday, March 23)

1. **For formal written solution:** Problem 6.28, page 237. Please use Mathematica to carry out the lengthy algebraic calculations in this problem, and to plot the final result. For hints, see the handout distributed with the syllabus on the first day of class. Once you have completed the calculation and plot, think carefully about how to present it in a formal write-up. You'll need to show all of your Mathematica code, but you should not show much of the lengthy algebraic output. You could put all the code in one place and then refer to lines by number, or present the code line by line, with explanations in between. As always, use your best English and be sure to explain the meaning of the results.

Additional problems:

2. Problem 6.4, page 225. "Estimate" in this case means try to get an answer that's accurate to within 10% or so.
3. Problem 6.6, page 227. Here the word "estimate" is simply an acknowledgment that a small uncertainty in the temperature might create a large uncertainty in the answer.
4. Problem 6.15, page 231.
5. Problem 6.16, page 231. The formula that you'll derive in this problem will be used repeatedly in the text, so I want you to become reasonably comfortable with it.
6. Problem 6.20, page 233. For part (e), feel free to copy your previous work from Problem 3.25, if you completed that problem. Be sure to explain what's going on in both limits, and include a computer-drawn graph of the heat capacity as a function of temperature.
7. Problem 6.23, page 236.
8. Problem 6.31, page 240.