

Statistical Mechanics and Thermodynamics

**Homework for Week 11**

Due Wednesday, 2 April 2008

Reading: K&K chapter 10. We'll have more to say about phase transitions at the end of the course. Instead of two weeks for a long assignment, I'm just giving a light assignment this week.

1. K&K 10.1.

2. K&K 10.2.

Comment on some of the solutions to HW8-9: the chef (and wartime OSS agent) Julia Child (1912–2004) is credited with popularizing gourmet French cooking in the United States through her public-television shows and cookbooks. Her appearance and manner of speaking made her instantly recognizable, and in the early 1970s another public-television show called “The Electric Company,” aimed at children in the first grade, ran a skit featuring the character “Julia Grownup.” Grownup is giving a lesson on how to cook a turkey for Thanksgiving. After dressing the turkey (in a fine suit), she advises “now put the turkey in the oven and cook it at 450 degrees [Fahrenheit] for one hour, or at 1 degree for 450 hours.” Why does even a first-grader recognize the humor in this statement? More to the point on the homework, consider two temperatures,  $T_1 = 212^\circ\text{F}$  and  $T_2 = 32^\circ\text{F}$ . Does it make sense to take the ratio of these two numbers in Fahrenheit? In Celsius? How about in Kelvin or in Rankine?

Erratum on HW10 assignment: in Problem 4, “keep make” should read “make.”