Physics 214A **Winter 2009**

Statistical Physics **due 9:30 am Tuesday, March 10**

PROBLEM SET 8

Final Exam: The final exam will take place on Thursday March 19 from 8:30 am to 10:30 am 114 MSTB. The final will cover chapters 1 to 7, chapters 9 and 10, and section 8.5. You are also responsible for all the material covered in lecture (see lecture notes on web). A formula sheet will be provided.

Reading: Chapters 9 and 10 in Reif. You may skip section 9.12

Problems:

1. Reif 9.13
2. Reif 9.20, part a only
3. Reif 9.21
4. Reif 10.1
5. Reif 10.2
6. Reif 10.9
7. Consider a two dimensional spinless ($S = 0$) ideal Bose gas in two dimensions with periodic boundary conditions (so it is on a toroidal surface. The gas occupies an area A and has N particles, each with mass m. Can this system undergo Bose-Einstein condensation? If so, find the transition temperature T_C. If not, show explicitly why not.