Physics 410 - 2003
Thermal Physics
Problem Set 9

1. Relate the mean square fluctuation of the number of particles $\langle (N - \langle N \rangle)^2 \rangle$ to the derivative $(\partial^2 p / \partial \mu^2)_{\tau, V}$ (5 pt)

2. Derive the interrelation between the potential Ω and the grand partition function (grand sum) $\mathcal{Z}$ that was written in class (5 pt)

3. Chapter 6, p. 177, problem 1 (4 pt)

4. Chapter 6, p. 177, problem 2 (4 pt)

5. Chapter 6, p. 178, problem 7 (6 pt)

6. Chapter 6, p. 180, problem 12 (5 pt)

7. Chapter 6, p. 180, problem 13 (5 pt)

You need to have 25 points (9 extra credit points)

The problems are from Kittel & Kroemer, *Thermal Physics*, 2nd edition, (Freeman, NY 1980).