PHY 410
HW#3
Assigned 26 Jan 09: Due 2 Feb 09

3.1 Problem 1, Chapter 2 of Kittel and Kroemer (Text) (5 points)

3.2 Two identical copper blocks of mass m grams, one at (fundamental) temeperature τ_1 and the other at temperature τ_2 are brought into thermal contact until they reach thermodynamic equilibrium. The heat capacity of copper/gram is C_V.

What is the final temperature τ_F? (2 points)

Show that the increase in the number of accessible microstates during this process is given by (8 points)

$$ g = \left(\frac{\tau_F^2}{\tau_1 \tau_2} \right)^{\frac{mC_V}{k_B}} $$

3.3 Problem 2 Chapter 2 of Kittel and Kroemer. (5 points)

3.4 Problem 3, Chapter 2 of Kittel and Kroemer. (10 points)

3.5 Problem 5, Chapter 2 of Kittel and Kroemer. (10 points)