

PHY 3513 Fall 2000 – Homework 7

Due at the start of class on Monday, November 6.

Answer all questions. To obtain full credit, you must explain your reasoning and show all working. Please write neatly and include your name on the front page of your answers.

1. Callen Problem 3.9-3.

2. Callen Problem 3.9-4.

3. Callen Problems 4.4-1 and 4.4-2.

Problem 4.4-2 is nonsense as posed. There is no solution possible for T_{30} and the answer to the last part would be trivially related to a result obtained in Problem 4.4-1.

You should do the problem assuming that **body 1** is restored to its initial state by placing it in contact with body 3. In the last part, find the decrease in the entropy of **body 3** during the restoration process.

4. Callen Problems 4.5-1 and 4.5-2.

Make sure that you give an algebraic answer to each part of these problems before inserting the numbers provided. You should use the maximum work theorem for the first problem, but not for the second, where you should instead calculate the work and heat transfers directly.