Physics 410 - 2003

Thermal Physics

Problem Set 7

1. Show that, in Chapter 4 of the textbook, Eqs. (9a)-(9c), p. 92, give the solution of the wave equation (12), and that this solution satisfies the condition (10). (5 pt)

2. Chapter 4, p. 112, problem 7 (5 pt)

3. Chapter 4, p. 114, problem 15 (10 pt)

4. Chapter 4, p. 110, problem 2 (4 pt)

5. Wien's displacement law: find the position of the maximum ω_m of the spectral density of radiation u_ω. Analyze its temperature dependence. Use the values of the Planck constant and Boltzmann constant to find ω_m and the corresponding wavelength of light for $T = 6000$ K. (5 pt)

You need to have 25 points (4 extra credit points)

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