

ECE 278
Homework #2 Hint and corrections

For problem three, the following definite integral will be useful:

$$\int_0^{\infty} \frac{x^3 dx}{e^x - 1} = \frac{\pi^4}{15}$$

The correct formula for the intensity of blackbody radiation is:
(The lecture notes are wrong by a factor of 4).

$$I(\nu)d\nu = (c/4) \cdot \varepsilon(\nu)d\nu / L^3 = \frac{h\nu}{e^{h\nu/k_B T} - 1} \cdot \frac{2\pi}{c^2} \nu^2 d\nu$$

The correct strategy for the problem is to evaluate:

$$P = A \int_0^{\infty} I(\nu) d\nu$$