SCI220 – Foundations of Musical Acoustics
Cogswell Polytechnical College
Fall 2008

Week 5 – Homework
Problem set due 09/30, lab due 10/02

Exercises

Complete problems 1, 2, 3, 4, 5, and 7 from page 251.

Extra credit (hint-review appendix):

7. If a total energy E = 200 J is received uniformly during time t = 4 sec and spread over an area S = 5 m^2, what is the intensity?
8. If a sound of intensity I = 0.01 W/m^2 falls on a window of area S = 53 m^2, what is the total power received? If this continues for an hour, what total accumulated energy arrives?
9. You might encounter sound levels of 75 dB in city traffic and 115 dB at a rock concert. What is the intensity ratio for these two sounds? What is their amplitude ratio?
10. An outdoor air-raid siren produces sound levels of 115 dB at a distance of 10m. How far away must you go to find a level of 85 dB? (assume no reflecting surfaces or other complications to undermine the inverse-square law).

Lab Assignment

Read and complete the REALsimple psychoacoustics lab PDF file. Make sure you print out your plots and answer the questions in section 4.1 of the lab.

Note: group work is acceptable and recommended, if and only if, you write your own homework to submit. Remember to show your work on the problem sets and submit all of your data for the lab.