

Homework 12

Date Assigned: Friday, November 9, 2007

Date Due: Wednesday, November 14 (items 1-4) and Monday, November 19, 2007 (item 5)

Reading: Please continue to study Chapter 4 (all sections) in the Lathi text on the Fourier transform.

Exam 3 will be on Friday, November 16.

Lab Project: By November 19, please write (or revise) an abstract describing your lab design project. Include the title, the names of the participants, and a brief description of what you plan to do. Please send your abstract to Professors Nepal and Kozick by email: kundan.nepal@bucknell.edu and kozick@bucknell.edu

Problems: Please do items 1-4 for Nov. 14 and item 5 for Nov. 19.

1. Find the Fourier transform of the functions $\delta(t)$ and $\delta(t - 1)$ using the *definition* of the Fourier transform, not the table. In other words, compute the integral that defines the Fourier transform for these time functions. (Hint: Recall the “sifting” property of impulse functions.)
2. Please solve the following problems in the Lathi text for **Wednesday, November 14**.
Problem 4.2-1.
3. Sketch $F(\omega) = 2000 \operatorname{sinc}(1000\omega)$. Using the tables, find the inverse Fourier transform, $f(t)$, and sketch $f(t)$.
4. What is the Fourier transform of $\sin(2\pi 1000t)$? Sketch the 2-sided spectrum.
5. Please solve the following problems in the Lathi text for **Monday, November 19**.

Problems 4.2-4 and 4.3-3(a).