

ECE 4601
ASSIGNMENT NO. 1

DATE ASSIGNED: Thursday, August 21, 2003

DATE DUE: Thursday, August 28, 2003

READING: Chapter 2

PROBLEM 1.1. Find and sketch the Fourier transforms of the following signals:

- (a) $x(t) = \delta(t - 0.1)$
- (b) $x(t) = \pi$
- (c) $x(t) = \sin(4\pi t)/(4\pi t)$
- (d) $x(t) = u(t + 1) - u(t - 1)$, where $u(t) = 0$ for $t < 0$ and $u(t) = 1$ for $t \geq 0$.
- (e) $x(t) = 8\cos(8\pi t - \pi/4)$
- (f) $x_k = 3\delta_{k+3}$
- (g) $x_k = \delta_{k-1} + \delta_{k+1}$

PROBLEM 1.2. Find and sketch the signals that correspond to the following Fourier transforms:

- (a) $X(f) = u(f + 220) - u(f - 220)$, where $u(f) = 0$ for $f < 0$ and $u(f) = 1$ for $f \geq 0$.
- (b) $X(f) = \sin(880\pi f)/(880\pi f)$
- (c) $X(f) = \delta(f + 9)$
- (d) $X(e^{j\theta}) = e^{j4\theta}$
- (e) $X(e^{j\theta}) = 5\cos(5\theta)$

PROBLEM 1.3. Do Problem 2.3 of the book.

PROBLEM 1.4. Do Problem 2.4 of the book.

PROBLEM 1.5. Do Problem 2.5 of the book.