Homework #7

Chapter 6

46 f, h
47 b, e
50 a, c (assume x(t) is real)
54.
59.

Class 1.

a) Find the Fourier Transform of tri(t/0.2)
b) What is the relationship between the Fourier Transform of rect(t/0.1) and the Fourier Transform of tri(t/0.2)?
c) Find the inverse Fourier Transform of tri(f/0.2)
d) Find the Fourier Series for $x_p(t) = \sum_{k=-\infty}^{\infty} tri(\frac{t-k}{0.2})$

Class 2.

a) Find the Fourier Transform for $x(t) = 15000\text{sinc}^2(15000t)$.
b) What is the total energy in x(t)?
c) What % of the total energy is in the frequency range $|f| \le 5000$?

Class 3. Let $x(t) = e^{-|t|}$ find the Fourier Transform of

a) $x(2t)$
b) $x(t-1)$
c) $x(t)\cos(2\pi 10t)$
d) $x(t) + rect(t)$
e) $\frac{dx(t)}{dt}$
f) $\int_{-\infty}^{t} x(\lambda)d\lambda$