ECE 366 HW #2
Fall 2008
Due 09/12/08

- Office Hours: MW 3:30-5:00 p.m.
- The following questions are from Lathi's book, Second Edition.
- Read Chapter 1.1-1.3 and 1.5.
- You should turn in your solutions to all of the problems.

1. [24] Determine whether the following signals are energy or power signals. Compute the energy or power for each signal where appropriate.

   a) $x(t) = 10\sin(5t)\cos(10t)$
   b) Signal in Figure P.1.1-2 (d)
   c) Signal in Figure P.1.1-4
   d) $x(t) = te^{-|t|}$
   e) $\sin(t)u(t)$
   f) $x(t) = \begin{cases} t^{-1/2}, & t \geq 1 \\ 0, & t < 1 \end{cases}$

2. [16] 1.3-5

3. [16] 1.2-3

4. [20] 1.5-6

5. [12] Find and sketch the odd and the even parts of the following signals.
   a) $e^{-t}u(t)$
   b) $(1+t)^2$
   c) $\cos(\omega_0 t)u(t)$

6. [12] Determine whether the following functions are periodic or not and find the period and the frequency if periodic.

   a) $x(t) = 4 - 3\sin(12\pi t) + \sin(30\pi t)$
   b) $x(t) = 4e^{j16\pi t} - 5e^{-7\pi t}$
   c) $x(t) = 2\cos(8\pi t) + \cos^2(6\pi t)$
   d) $x(t) = \cos(10\pi t)\cos(10t)$