

ECE 366 HW #4
Fall 2008
Due 09/26/08

- Office Hours: MW 3:30-5:00 p.m.
 - The following questions are from Lathi's book, Second Edition.
 - Read Chapter 2.1, 2.3, 2.4 and 2.6.
 - You should turn in your solutions to all of the problems.
1. [40] Find and sketch the convolution of the given pairs of functions. For each problem, you can use either the integration or the graphical method for convolution. Do not use the convolution table in the book. Show all your work to receive full credit.
 - a) P2.4-18 f
 - b) P2.4-18b
 - c) P2.4-18g
 - d) $x(t) = e^{-at} [u(t) - u(t - 2)], h(t) = u(t - 2) + 5\delta(t - 1)$
 - e) $x(t) = u(t), h(t) = 4e^{-2t} \cos(3t)u(t)$
 2. [15] Consider the following LTI systems with the given input-output relationships. For each case, find the impulse response of the system by letting $x(t) = \delta(t)$ to obtain $y(t) = h(t)$.
 - a) $y(t) = x(t - 7)$
 - b) $y(t) = \int_{-\infty}^t x(\tau - 7) d\tau$
 - c) $y(t) = \int_{-\infty}^t \left[\int_{-\infty}^{\sigma} x(\tau - 7) d\tau \right] d\sigma$
 3. [10] 2.4-22
 4. [15] 2.4-24
 5. [10] 2.6-6
 6. [10] 2.6-7