

ECE 366 HW #9
Fall 2008
Due 12/01/08

- Office Hours: MW 3:30-5:00 p.m.
 - The following questions are from Lathi's book, Second Edition.
 - Read Chapters 3.5-3.8, 5.1-5.5
 - You should turn in your solutions to all of the problems.
1. [15] For the following systems with the given impulse responses, find the zero-state output for the given input signal:
 - a) $x[n] = u[n + 4] - u[n - 1], h[n] = 2^n u[2 - n]$
 - b) $x[n] = -\delta[n + 3] + 2\delta[n + 1] + \delta[n] + \delta[n - 1], h[n] = \delta[n + 2] - \delta[n + 1] + \delta[n - 2] + \delta[n - 3]$
 - c) Consider $x[n]$ and $g[n]$ in Figure P3.8-19.
 - d) $x[n] = e^{-n}u[n + 1], h[n] = (-2)^n u[n - 1]$
 2. [11] 3.8-24
 3. [15] Find the z-transform of the following signals and specify the region of convergences. Indicate whether or not the Fourier transform of the sequence exists. You can use the z-transform properties to simplify your calculations:
 - a) $x[n] = u[n] - u[n - 2]$
 - b) $x[n] = 2^{n+1}u[n - 1] + e^{n-1}u[n]$
 - c) $x[n] = 0.5^n [u[n] - u[n - 10]]$
 - d) $x[n] = \begin{cases} 0, & n < 0 \\ 1, & 0 \leq n \leq 9 \\ 0, & 9 < n \end{cases}$
 4. [15] 5.1-5 b, f, j
 5. [12] 5.2-9 a, d, j
 6. [12] 5.3-3
 7. [10] 5.3-19
 8. [10] 5.5-4