

LAST ONE!

ECE 366 HW 11

Due Wed.
4/29

- 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. [16] For the following systems with the given impulse responses, find the zero-state output for the given input signal:
 - a) $x[n] = (2)^n u[n-1], h[n] = 2^n u[2-n]$
 - b) $x[n] = u[n], h[n] = \delta[n] - 2\delta[n-1]$
 - c) Consider $x[n]$ and $g[n]$ in Figure P3.8-21 (a).
 - d) $x[n] = e^{-n} u[n+1], h[n] = (-2)^n u[n-1]$
 2. [10] 3.10-5
 3. [16] Find the z-transform of the following signals and specify the region of convergences. Indicate whether or not the discrete-time Fourier transform of the sequence exists. You can use the z-transform properties to simplify your calculations:
 - a) $x[n] = 3[u[n] - u[n-5]]$
 - b) $x[n] = 2^{n+1} u[n-1] + e^{n-1} u[n]$
 - c) $x[n] = n2^n u[n-1]$
 - d) $\left[2^{-n} \cos\left(\frac{\pi}{3}n\right) \right] u[n-1]$
 4. [12] 5.1-5 a, g, k
 5. [12] 5.2-9 c, e, i
 6. [12] 5.3-6
 7. [12] 5.3-18
 8. [10] 5.5-5 (a) sketch the magnitude and phase responses and determine the type of filter.