

Recitation 7 Outline

March 17, 2004

Linear Systems Review

1. Linear systems in continuous and discrete time
 - Basic definitions
 - Causality
 - Time invariance: convolution and the impulse response
2. Continuous time frequency response: Laplace Transform
 - Complex exponentials as eigenfunctions
 - Bilateral Laplace transform versus the Fourier transform
 - Properties: convolution, energy, symmetries
 - Domain of convergence and stability
 - Rational transfer functions and linear differential equations
 - Visualization in s -plane: poles, zeros, and the $j\omega$ -axis
 - Inverse transforms and partial fraction expansion
3. Discrete time frequency response: Z Transform
 - Bilateral Z-transform versus the discrete Fourier transform
 - Analogies to continuous time properties
 - Visualization in z -plane: poles, zeros, and the unit circle