Fall 2018 - Quiz 5 ECE 301: Signals and Systems

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Problem 1

Consider an LTI system which follows following differential equation

$$\frac{dy(t)}{dt} + ay(t) = x(t).$$

a Find $H(j\omega)$

b Find h(t).

- c Comment on the functionality of the system.
- d What impact does changing the value of a have on the system?

Problem 2

Given the DTFT $Y(e^{j\omega})$ of a signal y[n], answer the following questions

$$Y(e^{j\omega}) = \cos(\omega)$$

- a Is y[n] real?
- b Is y[n] even?
- c Evaluate $\sum_{n=-\infty}^{\infty} y[n]$ d Evaluate $\sum_{n=-\infty}^{\infty} (-1)^n y[n]$