



EE562 - Digital Signal Processing I
Second Semester (212)

Dr. Wail A. Mousa
Department of Electrical Engineering, KFUPM

Computer Assignment/Homework 5

Date: February 15, 2022
Due date: February 21, 2022

Objective:

To compute the DTFT of a given DT signal using the DTFT definition:

$$X(\omega) = \sum_{n=-\infty}^{\infty} x(n)e^{-j\omega n}$$

The required task:

Consider the following impulse response:

$$h(n) = \frac{1}{3}\delta(n) + \frac{1}{3}\delta(n-1) + \frac{1}{3}\delta(n-2).$$

1. Using MATLAB, compute its DTFT for $n=-5:5$ and $\omega \in [-\pi, \pi]$. Define ω to be of 512 points.
2. Use the MATLAB functions: **abs** and **angle** to plot the magnitude and phase spectra of $h(n)$.

What to submit?

1. A print of the written MATLAB M-file.
2. The plots of $h(n)$, $|H(\omega)|$ and $\angle H(\omega)$
3. Your observations if any.

Homework: Solve problems: 4.6 (a), 4.9 (g), 4.12(c) and 4.14.