Assignment 1

Instructions

- Use Matlab/Python to solve the programming problems.
- For your solutions, you need to submit a zipped file on Google classroom with the following:
  - program files (.m) or (.ipynb/.py)with all dependencies.
  - a report (.pdf) with your coding outputs and generated plots. The report should be self-complete with all your assumptions and inferences clearly specified.
- Before submission, please name your zipped file as: "A1_RollNo_Name.zip".
- Codes/reports submitted without a zipped file or without following the naming convention will NOT be checked.

Programming Problems (10 points)

1. Generate and plot each of the following sequences. Also, calculate the fundamental frequency.[CO1] (6 points)
   (a) $y[n] = cos[n/6]$
   (b) $y[n] = cos[\frac{8\pi n}{31}]$
   (c) $y(t) = cos(t/6)$
   (d) $y(t) = cos(t/6) + sin(\frac{2\pi}{3}t)$,

2. Find the even and odd components of the signal $x(t) = 2e^{-\alpha t}$. Plot these in three individual subplots for the interval (Take the interval and value of α as per your choice). Write a proper explanation for considering such value.[CO1] (4 points)

$$x(t) = \begin{cases} 2e^{-\alpha t} & for \quad t \geq 0 \\ 0 & for \quad t < 0 \end{cases}$$