

EEE 3005 Signals and Systems Laboratory - Experiment - 2

I. EXPERIMENTAL WORK

- 1) A cont. time $x(t)$ signal is given. Plot $x(t)$ versus $t = 0 : 0.01 : 5$. $x(t) = 10e^{-t} - 5e^{-0.5t}$
- 2) Repeat part (1) for $x(t) = 10e^{-t} + 5e^{-0.5t}$
- 3) An exponentially damped sinusoidal signal is defined by $x(t) = 20\sin(2\pi \times 1000t - \pi/3)(e^{-at})$ where the exponential parameter a is variable, taking on the set of values $a=250, 500, 750, 1000$. For each a value draw $x(t)$ signal for $-2 \leq t \leq 2$ milliseconds. Observe the effects of a on the signal. Using subplot command plot $x(t)$ signals for all a values on the same graph.
- 4) A rectangular pulse is defined by

$$x(t) = \begin{cases} 10 & \text{if } 1 \leq t \leq 10 \\ 0 & \text{Otherwise} \end{cases}$$

Write an matlab file to generate $x(t)$ signal.

- 5) A discrete time signal is given as

$$y[n] = \begin{cases} \cos(2\pi Fn) & \text{if } -1/(2F) \leq t \leq 1/(2F) \\ 0 & \text{Otherwise} \end{cases}$$

$F=0.1$, plow $y[n]$ signal versus $[n]$

- 6) draw the following signals using matlab

$$x(t) = \delta(t - 2), y[n] = \delta[n - 5]$$

- 7) A continuous time signal is defined as,

$$x(t) = \begin{cases} -t + 1 & \text{if } -1 \leq t \leq 0 \\ t + 1 & \text{if } 0 \leq t \leq 1 \\ 0 & \text{Otherwise} \end{cases}$$

Write an matlab function to generate $x(t)$ signal. Using your function draw the following signals $x(t - 5)$, $x(t + 5)$, $x(2t - 4)$, $-2x(-2t + 5)$. Take your time interval as $-8 \leq t \leq 8$.

- 8) Good Luck

Note: Use *plot* command to draw the continuous time signals.
Use *stem* command to draw discrete time signals.