EE562 - Digital Signal Processing I
Second Semester (212)

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Computer Assignment/Homework 3

Date: February 2, 2020
Due date: February 9, 2020

Computer Assignment

Objective:

To implement a constant coefficient difference equation that relates a discrete-time (DT) input signal through a DT LTI system with its DT output using MATLAB.

The required task:

Using the following difference equation:

$$y(n) = 0.8y(n-1) + 5x(n).$$

Obtain the discrete-time signal output $y(n)$ for n= -3, -2, …, 15 where the input is:

$$x(n) = 2\delta(n) - 3\delta(n-1) + 2\delta(n-3).$$

Assume that $y(n) = 0$ for $n < 0$. You can use the MATLAB control flow function "for" to perform difference equation calculation.

What to submit?

1. A print of the written MATLAB M-file.
2. The results:
    a. The plots of $x(n)$ and $y(n)$.
    b. A table containing the values of n, $x(n)$ and $y(n)$.
3. Your observations if any.

Do not forget to put labels for the x-axis and y-axis along with a title for each figure.

Homework: Solve problems: 3.2 (a,c,d) and 3.3 (a,d).