Signals & Systems Assignment 3 (Spring 2022) – 4Th Semester (CLO2)

Question 1. Find the Fourier series representation for the following signals and sketch their spectrums.

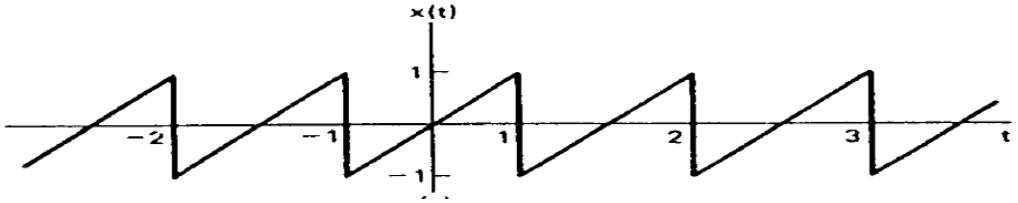
a) $x(t) = e^{j\frac{\pi}{4}t} + 2e^{j(\frac{3\pi}{4}t+\frac{\pi}{3})}$

b) $x(t) = cos\left(\frac{\pi}{2}t - \frac{\pi}{6}\right) + sin(\frac{3\pi}{4}t - \frac{\pi}{2})$

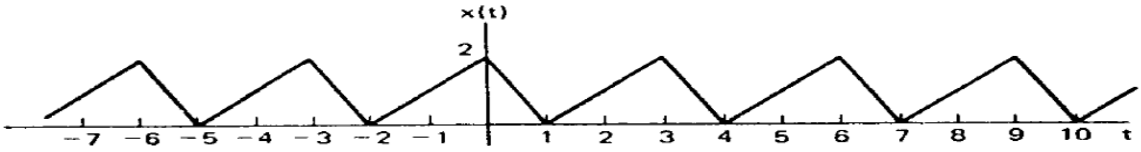
c) $x(t)$ with one period given bellow; (a_{-2} to a_2)

$$x(t) = \begin{cases} -1 & for -1 \le t \le 0 \\ 1 & for\ 0 \le t \le 1 \end{cases}$$

Question 1. Find the Fourier series representation (a_{-3} to a_3) for the signals given in the following figure and sketch their spectrums.



(a)



(b)

Q.3

Find the response/output y(t) when the signals given in question 1 (a &b) above, are passed through the system with impulse response $y(t) = e^{-t}u(t)$

Due date for this assignment is Monday 04th July 2022.

You can discuss and solve it in groups but you have to learn it and solve yourself at the end as your learning will be tested in the quiz on Monday 04th July 2022.