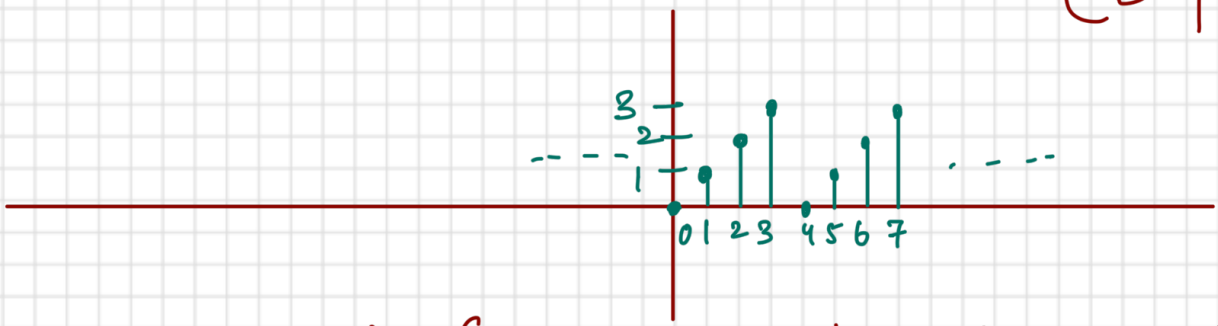
Classwork 24
FA24
UAH
CPE 381
Instructor: Rahul Bhadani

Name of the Student:

11/20/2024

Total Marks: 10 points

① Determine the Fourier coefficients for the periodic sequence $x[n]$ shown below: (5 points)



Note: Discrete fourier representation of a periodic sequence $x[n]$ is given by

$$x[n] = \sum_{k=0}^{N_0-1} c_k e^{jk\omega_0 n}$$

$\omega_0 = \frac{2\pi}{N_0}$

N_0 = fundamental period.

where c_k is the fourier coefficient given by

$$c_k = \frac{1}{N_0} \sum_{n=0}^{N_0-1} x[n] e^{-jk\omega_0 n}$$

(2) What is DTFT $X(e^{j\omega})$ of $x[n] = u[n+2] - u[n-3]$

Hint: Sketch the signal. (5 points)

Note: $X(e^{j\omega}) = \sum_{n=-\infty}^{n=+\infty} x[n] e^{-j\omega n}$