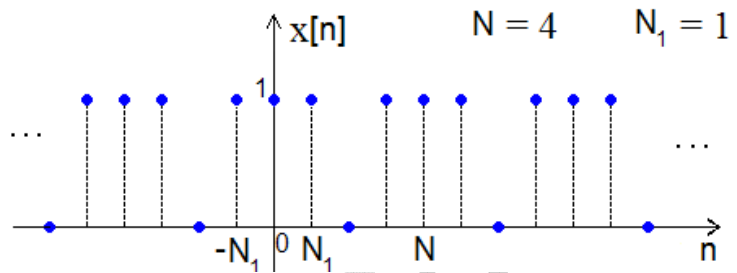## Signal Analysis – Homework 08
(Fourier Series - discrete)

1) – Calculate the coefficients c_k's of the **Fourier series** for the discrete periodic signal $x[n]$ illustrated in the figure below. Sketch the series for 4 consecutive terms and verify if it converges to the original signal $x[n]$.

$$x[n] = \sum_{k=\ell, \ell+1, \cdots}^{\ell+N} c_k e^{jk\omega_o n}$$

2) – Calculate the coefficients c_k's of the **Fourier series** for the discrete periodic signal $x[n]$ given below:
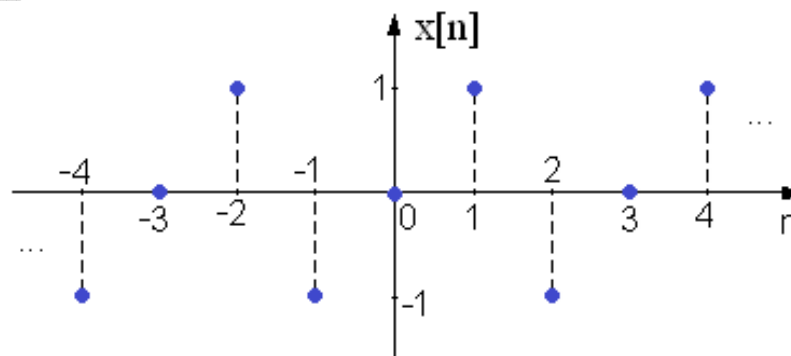
$$x[n] = e^{j\left(\frac{3\pi}{2}\right)n}$$

Sketch the series for 4 consecutive terms and verify if it converges to the original signal $x[n]$.

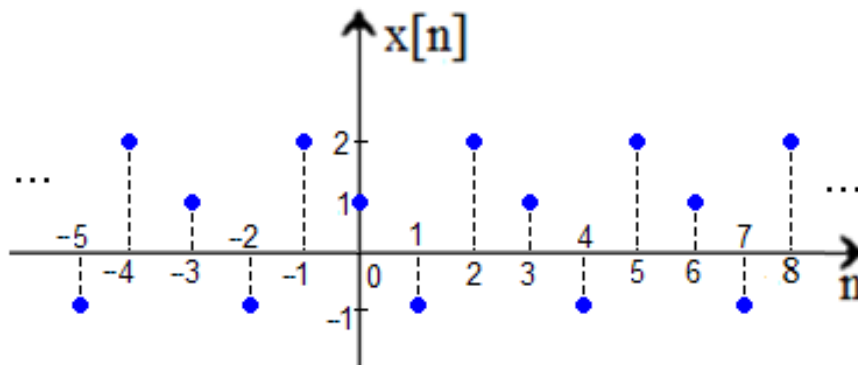$$x[n] = \sum_{k=\ell, \ell+1, \cdots}^{\ell+N} c_k e^{jk\omega_o n}$$

3) – Express the discrete periodic signals $x[n]$ of the graphs below in the form of a **Fourier series**.

a) –

Signal Analysis – Homework 08
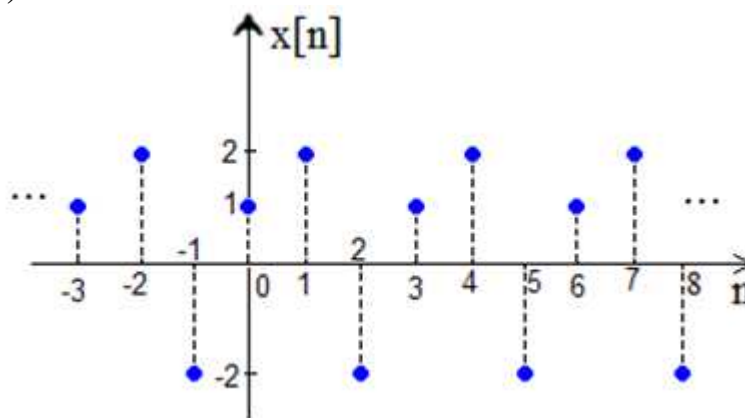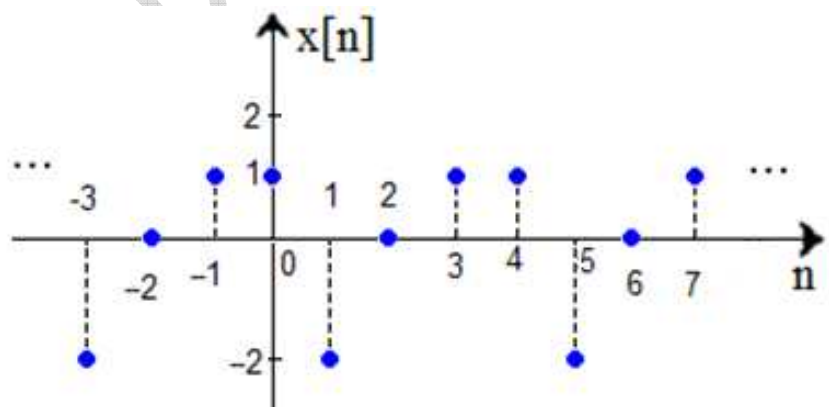## (Fourier Series - discrete)

b) –

c) –

d) –

e) –