# Problem 1

A discrete-time signal is shown in the figure, Sketch and label carefully each of the following signals:

a- $X[n-4]$

b- $X[3-n]$

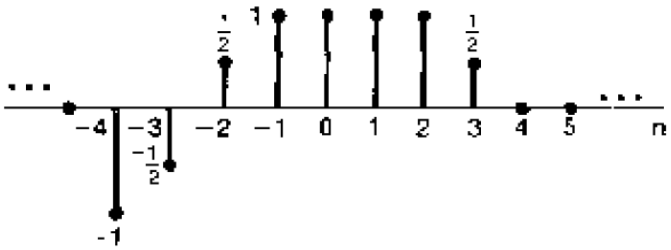
c- $X[3n]$

d- $X[3n+1]$

e- $X[n]u[3-n]$

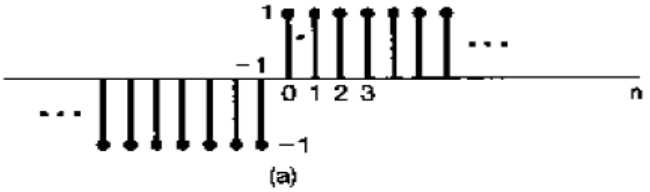
f- $X[n-2]\delta[n-2]$

g- $\frac{1}{2}X[n]+\frac{1}{2}(-1)^n x[n]$

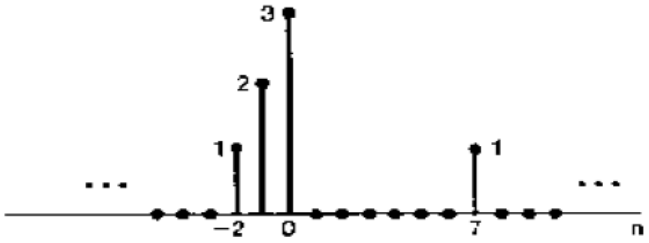



# Problem 2

Determine and sketch the even and odd parts of the signals in following figures, label your sketches carefully.




(a)




(b)

## Problem 3

Determine whether the signal is periodic or not

a- $X[n] = cos\left(\frac{8\pi}{7}n + 2\right)$

b- $X(t) = j\, e^{j10t}$

c- $X[n] = e^{j\frac{8\pi}{35}n}$

d- $X[n] = sin\,(0.2n + \pi)$

e- $X(t) = 2e^{j\left(t+\frac{\pi}{4}\right)}u(t)$