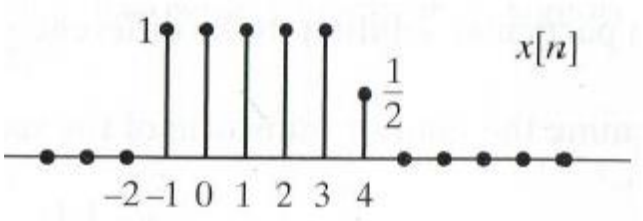
1. A discrete-time signal x[n] is shown here



Sketch the following :

a) x[n-2] b) x[4-n] c) x[2n] d) x[n]u[2-n]

e) x[n-1] δ [n-3].

2. For each of the following systems, determine whether the system is

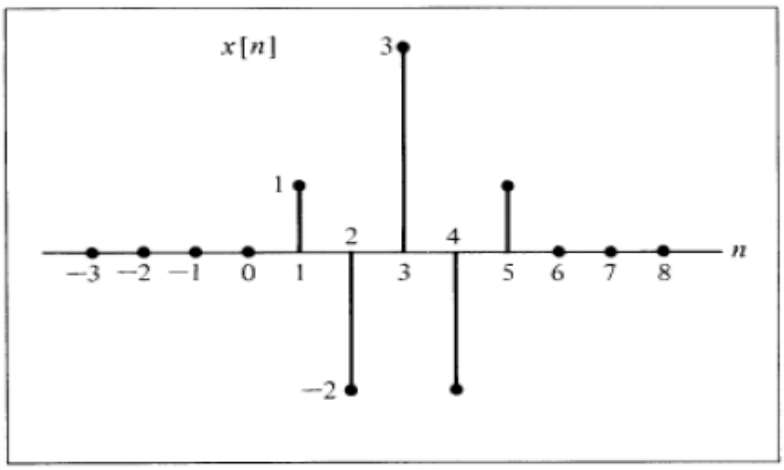
(1) Memory less, (2) causal, (3) linear, and (4) time invariant. In addition, state the reason.

a) $y[n] = x[n^2]$ b) $y[n] = (x[n])^2$

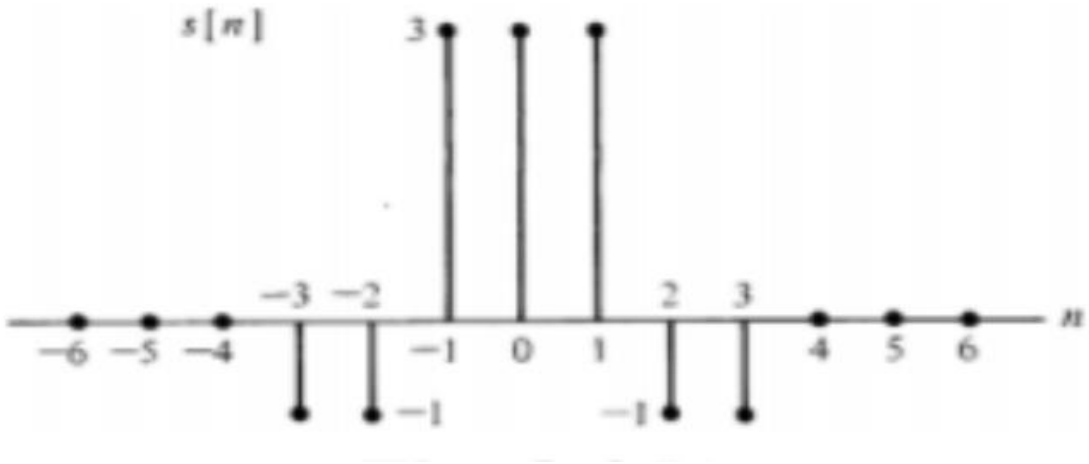
3.

Express the following as sums of weighted delayed impulses, i.e., in the form

$$x[n] = \sum_{k=-\infty}^{\infty} a_k \delta[n - k]$$



4. Express the following sequence as a sum of step functions in the form of $s[n] = \sum_{k=-\infty}^{\infty} a_k u[n-k]$



5. proof that :-

a) The product of two even signals is an even signal.

b) The product of two odd signals is an even signal.

c) The product of an even and an odd signal is an odd signal.

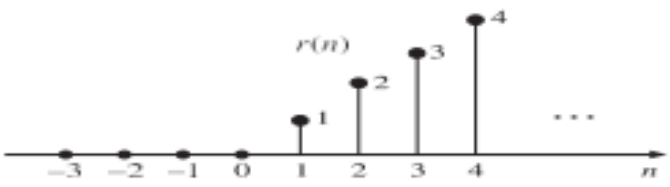
6. sketch the following

a) x(t) = u(t+3) – u(t-3) b)x(n) = &[n] + &[n-3]

c)) U(n+2) u(-n+3)

7. The graph show representation of Discrete–time: Unit ramp sequence

r(n). What is Shifted ramp sequence r(n – 2)? Draw



8. Consider a discrete-time signal x (n) with values X (-2) = -3, x(-1) = 2, x(0) = 0, x(1) = 3, x(2) = 1 and x(3) = 2

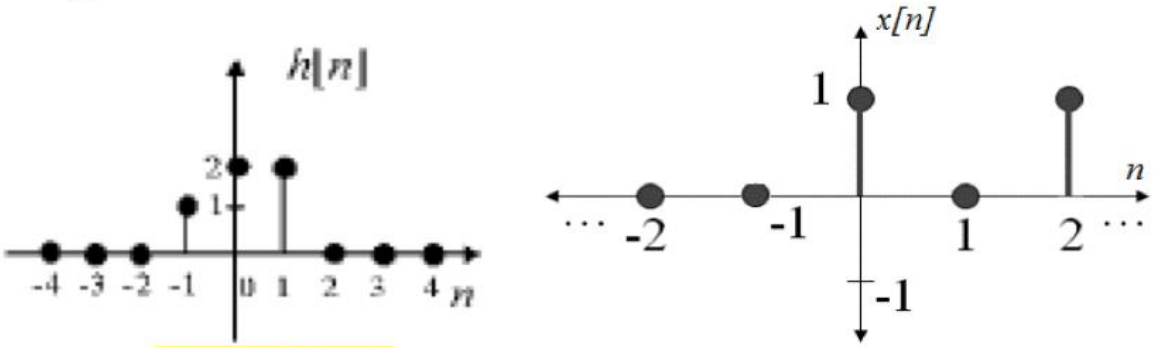
A. what is the Graphical representation of discrete-time signal *?*

B. Functional Representation?

c. Sequence Representation?

9.

Compute the convolution sum $y[n]=x[n]*h[n]$ using



a) Graphical method.
b) Numerical method.
c) Draw $y[n]$