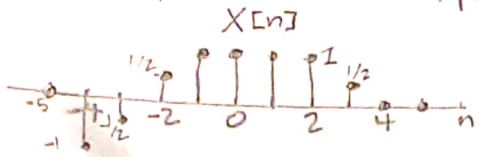
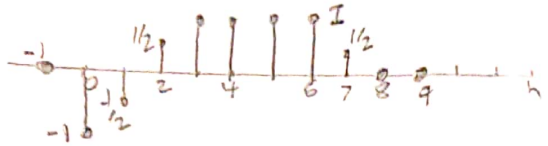
Rami Wail Shoula
ID: 201600112

Naneng 461
Assignment 2

P1

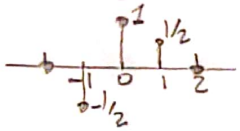


a) x[n-4]: shift to right by 4 :-

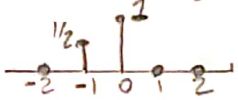


b) x[3-n] = x[-n+3]; shift to left by 3 then reflect in y axis:-

c) x[3n] : scale ↔ by 1/3; (integer multiples of 3)

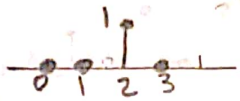


d) x[-3n+1]; shift to left by 1 then scale ↔ by 1/3.

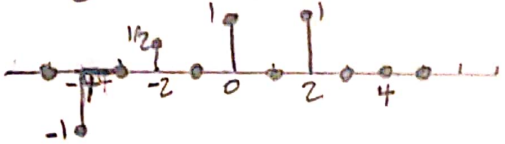


e) x[n]u[3-n] ≡ x[n]u[n] = x[n]
∴ same as first sketch of x[n]

f) x[n-2]δ[n-2] : shift to right by 2 * delta func., shifted to right by 2 :-



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



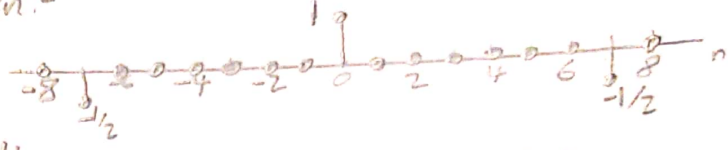
P2 a)

$x[n] = x_e[n] + x_o[n]$

$\therefore x_e[n] = \frac{1}{2}[x[n]+x[-n]]$

$x_o[n] = \frac{1}{2}[x[n]-x[-n]]$

even :-

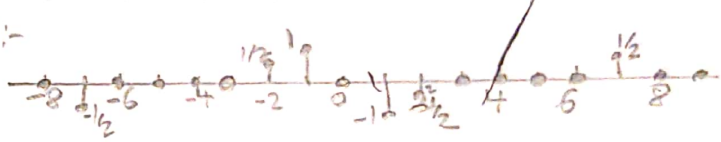


odd :-

b)

even :-

odd :-



P3 a) $x[n] = \cos\left(\frac{8\pi}{7}n+2\right)$; periodic if $x[n] = x[n+N]$ & fundamental period $T_0 = \frac{2\pi}{\omega_0}$

a) Periodic

b) periodic complex exponential
Fundamental period $\frac{2\pi}{10} = \frac{\pi}{5}$

c) Periodic

d) Not Periodic

e) Not periodic, because it is zero for $t<0$