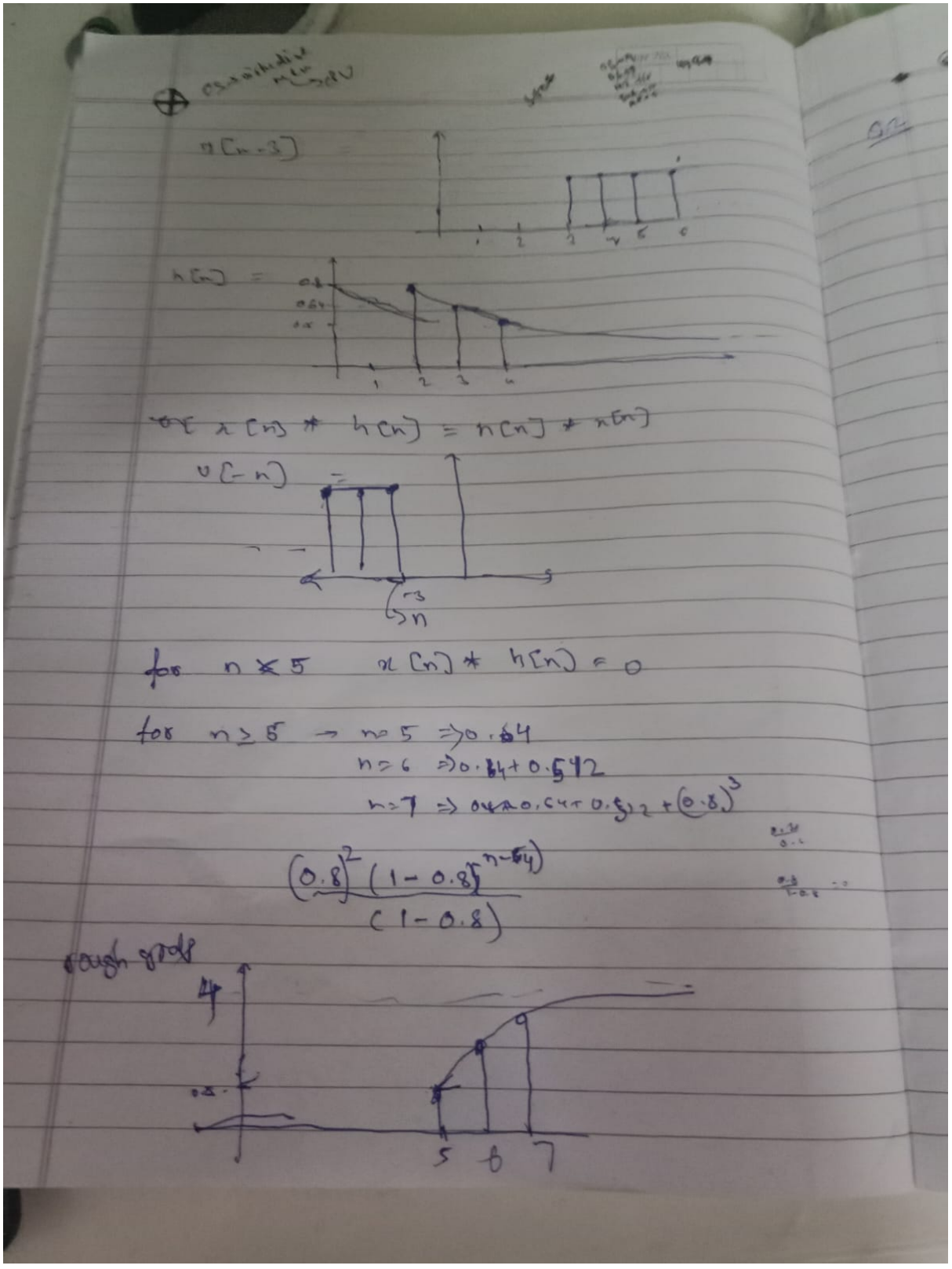
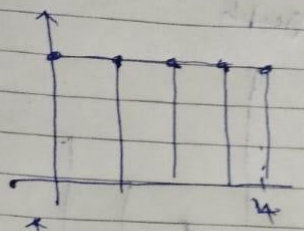
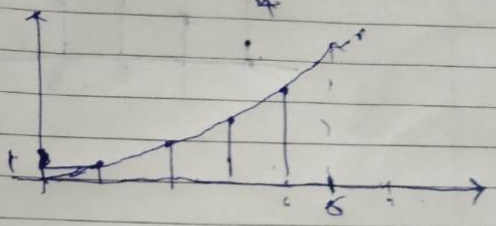


In qs 1 as told our range of study is from -10 to 10 so i have only plotted a graph between -10 to+10. Also for h[n] n starts from 0 and lands till 20 showing about the convolution that it starts from 0 then in start increases its value then its increase becomes small so it tells about each characteristic of convolution

Q.2 $x[n] =$

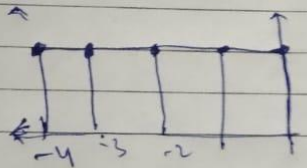


$h[n] =$



$h[n] * x[n] = x[n] * h[n]$

$x[-n] =$



for $n < 0 \rightarrow 0$

for $n \geq 0$ & $n \leq 4$ $\quad n=0 \rightarrow 0$

$n=1 \rightarrow \alpha^1$

$n=2 \rightarrow \alpha^1 + \alpha^2$

$n=3 \rightarrow \alpha^1 + \alpha^2 + \alpha^3$

$n=4 \rightarrow \alpha^1 + \alpha^2 + \alpha^3 + \alpha^4$

$n \geq 4$ & $n \leq 6 \rightarrow n=5 \rightarrow \alpha^2 + \alpha^3 + \alpha^4 + \alpha^5$

$n=6 \rightarrow \alpha^2 + \alpha^3 + \alpha^4 + \alpha^5 + \alpha^6$

$n \geq 6$ & $n \leq 10 \rightarrow n=7 \rightarrow \alpha^3 + \alpha^4 + \alpha^5 + \alpha^6$

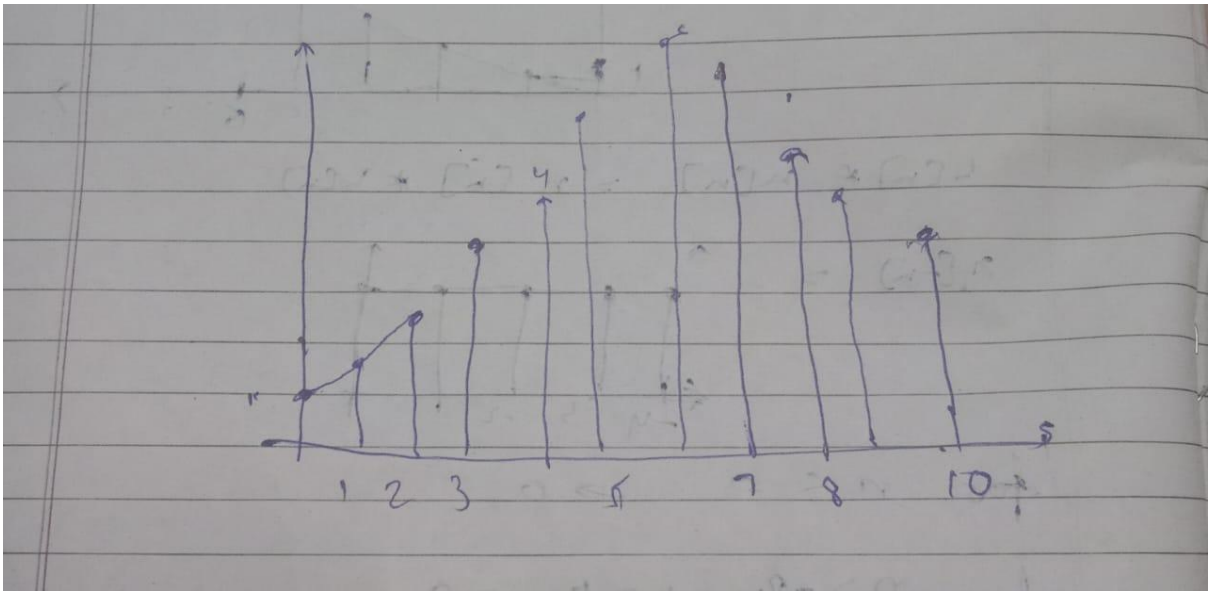
$n=8 \rightarrow \alpha^4 + \alpha^5 + \alpha^6$

$n=9 \rightarrow \alpha^5 + \alpha^6$

$n=10 \rightarrow \alpha^6$

$n \geq 10 \rightarrow 0$

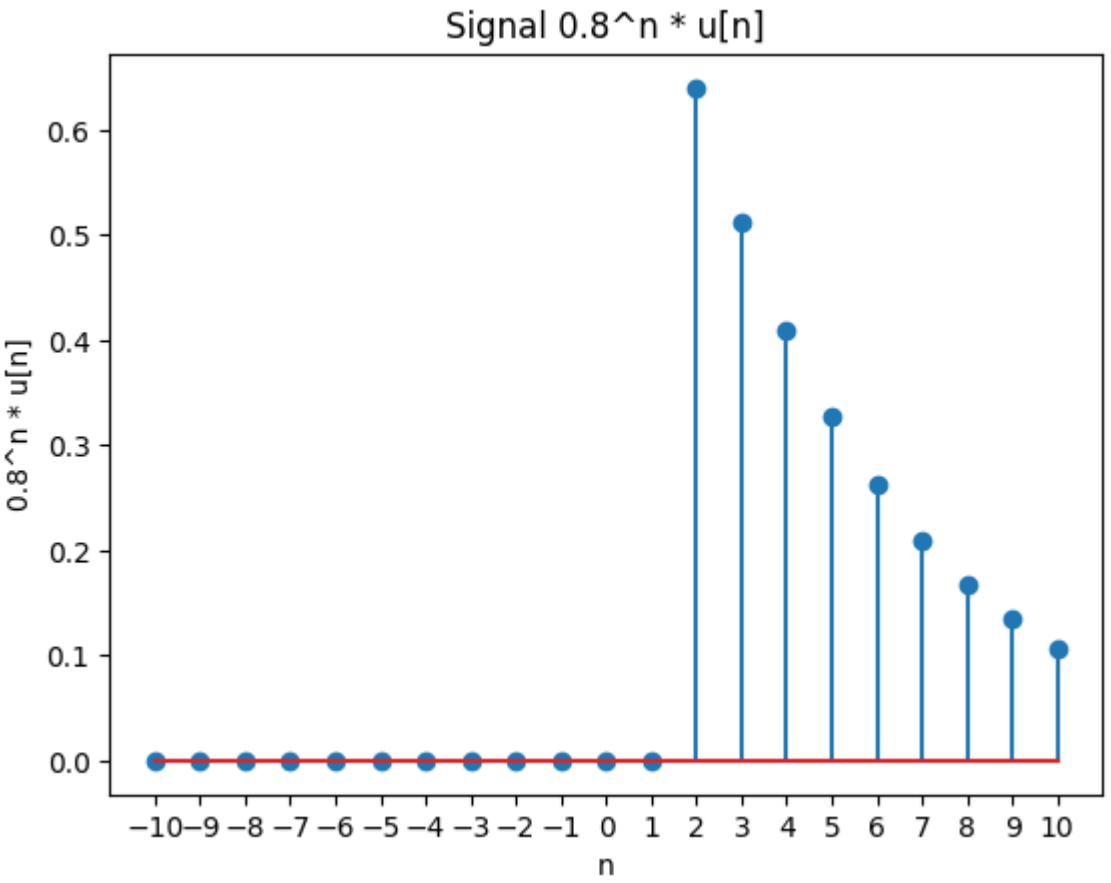
A small error at n=0 ans is 1

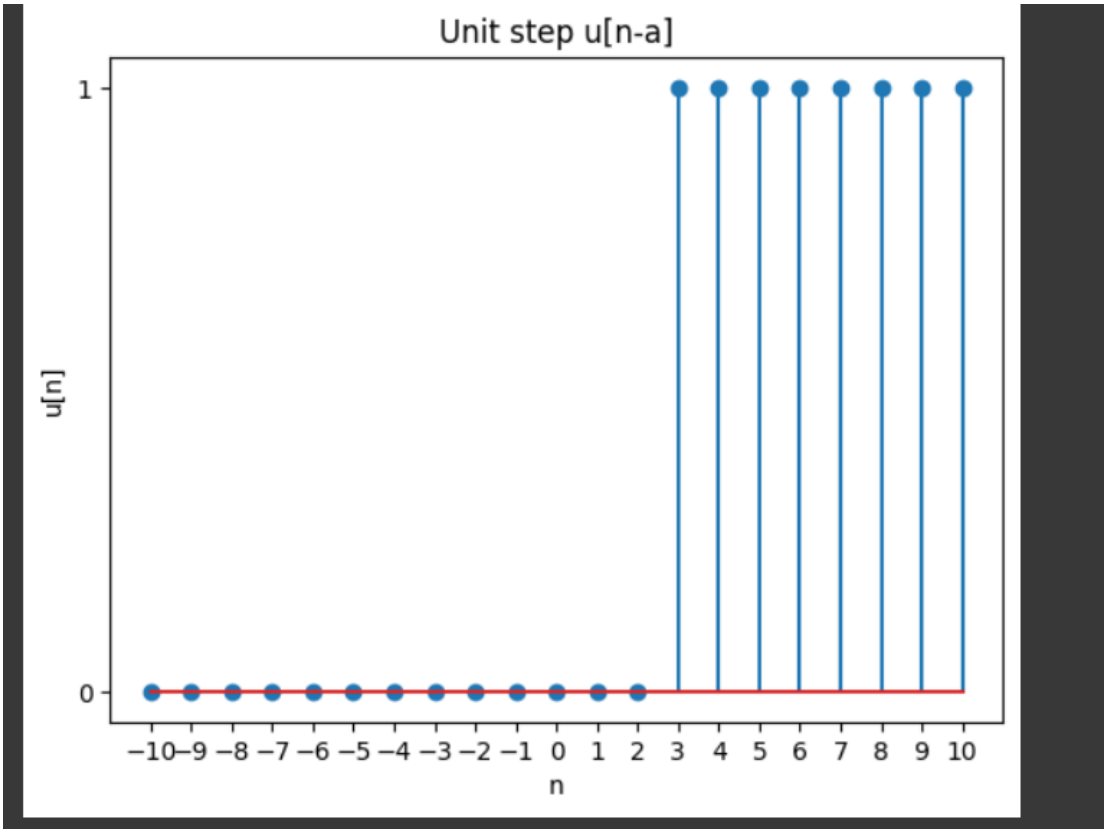


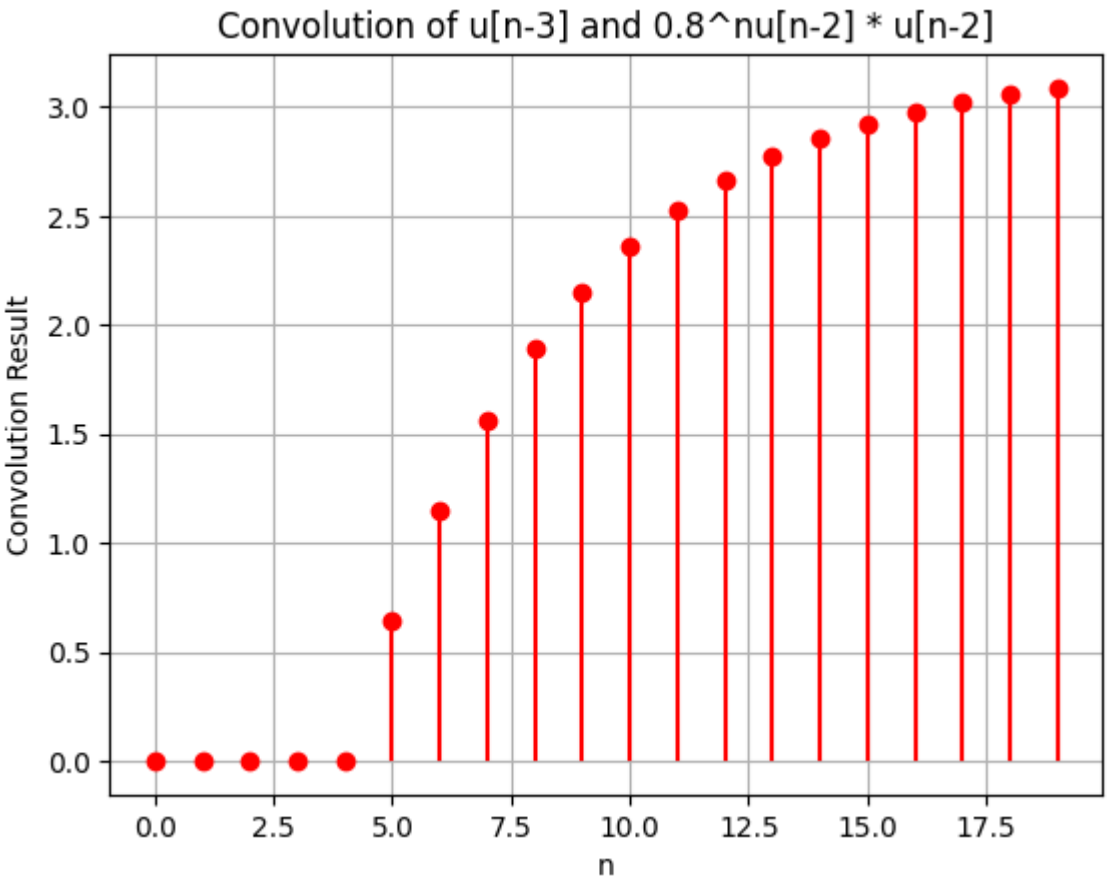
In qs 2 as range is not told i am plotting signal from -10 to 20 so i have only plotted graph between -10 to+10. Also for h[n] n plots starts from 0 and lands till 20 showing about the convolution that it starts from 0 then in start increases its value till n=6 then its decreases till n=10 becomes small and afterwards for n=11 it becomes so it tells about each characteristic of convolution. In this i am taking user input for alpha in plotting both the graph x[n] and y[n]

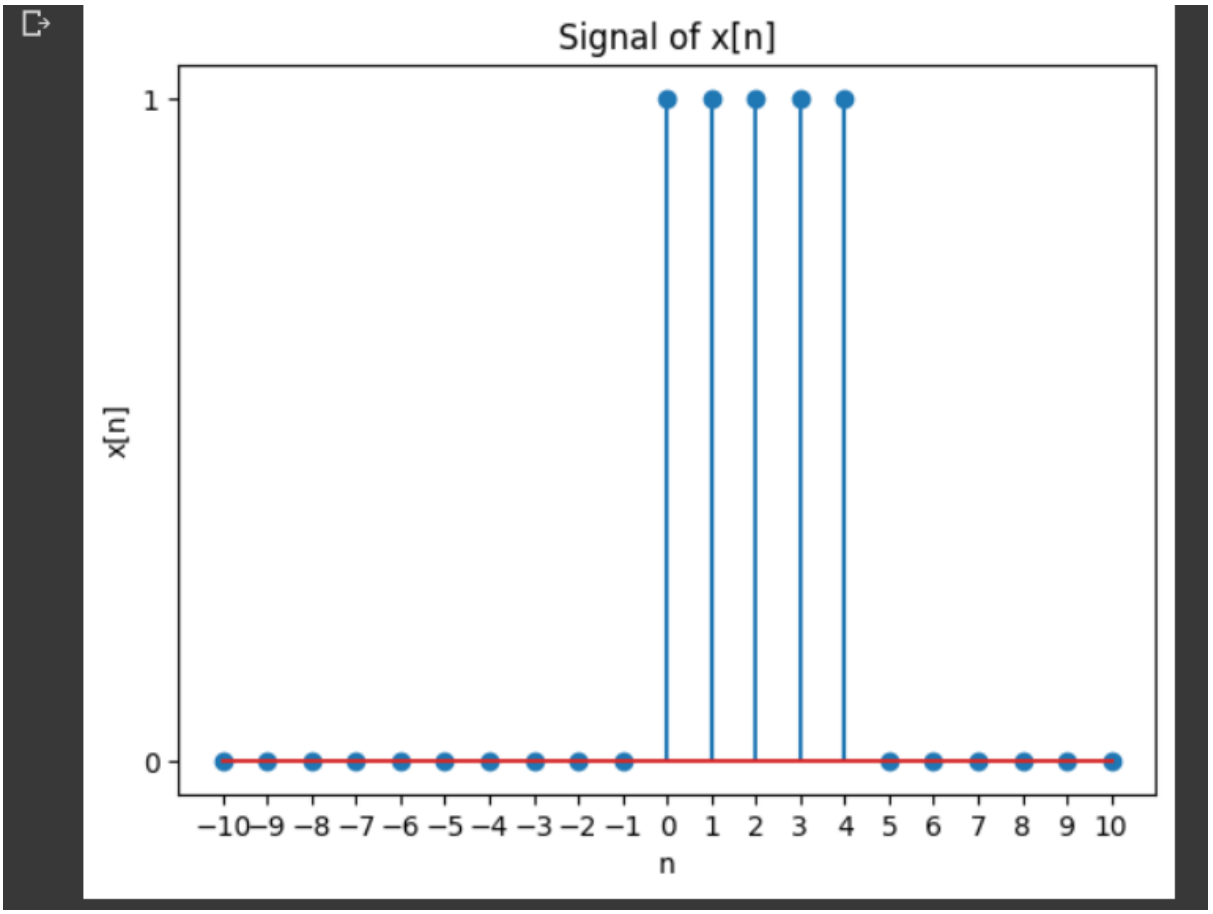
If i had chose alpha it would be 2 for values below 2 we cannot see the exponential effect of graph for values above 2 ex a=3 , even 3^6 becomes very large number so it becomes difficult for user to study the plots of graph so in my point of view appropriate value is 2

Plots screenshots Ques 1


Signal 0.8^n * u[n]
0.8^n * u[n]
0.0
0.1
0.2
0.3
0.4
0.5
0.6
−10 −9 −8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8 9 10
n


Unit step u[n-a]
u[n]
0
1
−10 −9 −8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8 9 10
n


Convolution of u[n-3] and 0.8^nu[n-2] * u[n-2]
Convolution Result
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
n


Signal of x[n]
x[n]
1
0
−10 −9 −8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8 9 10
n

```
Enter the value of alpha: 2
```