Signals and Systems Lab 6 (22 Feb 2024):

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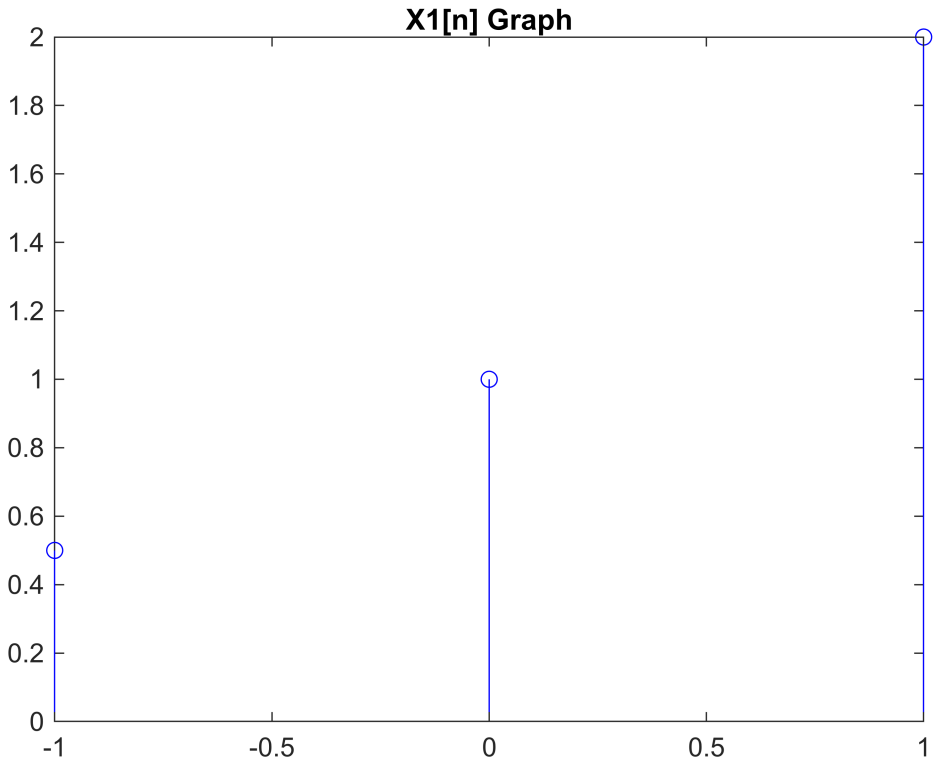
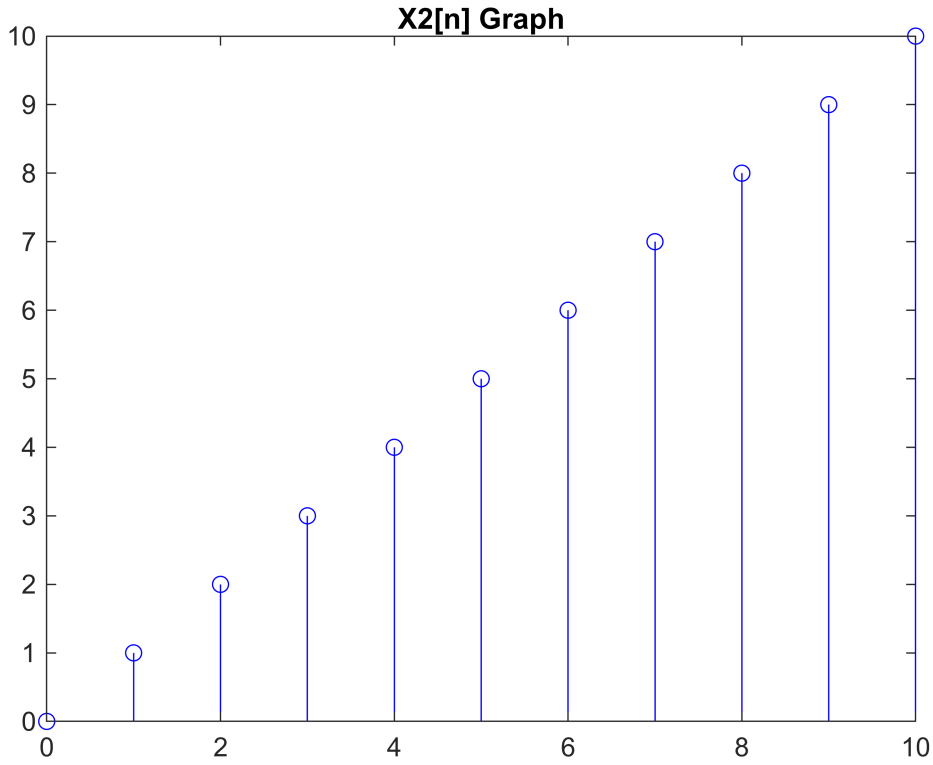
Section No. 4

Question 1

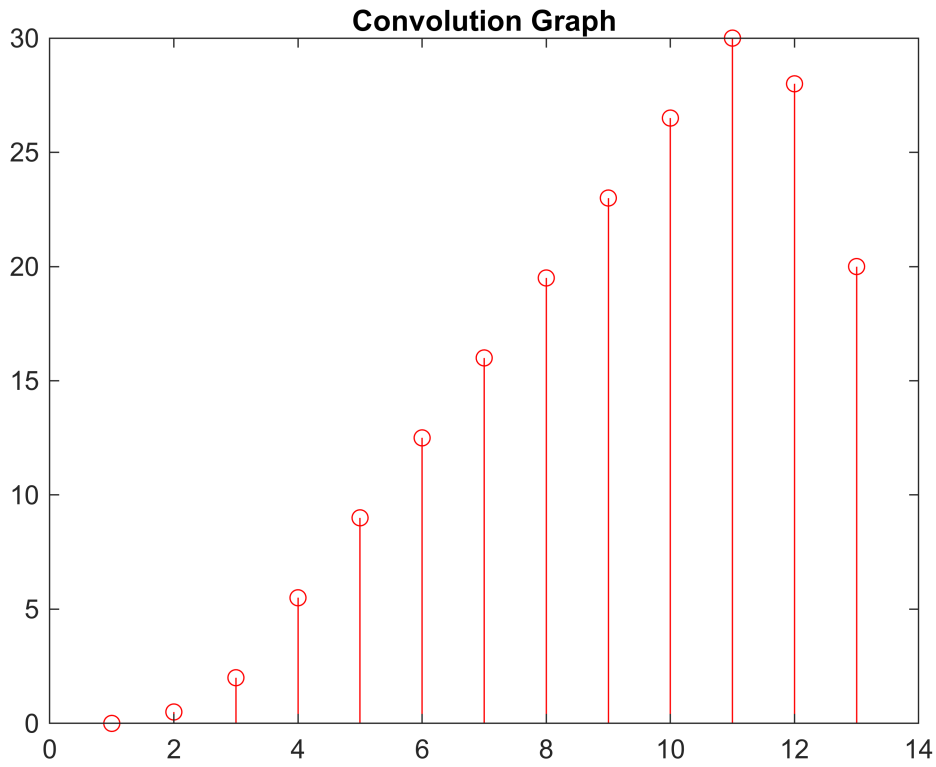
```
clc; close all; clear all;
n1 = -1:1:1;
x1 = ((1/2).^(-n1)).*(unit(n1+1)-unit(n1-2));
stem(n1,x1,"b");
title("X1[n] Graph");
```




```
n2 = 0:1:10;
x2 = unit(n2).*n2;
stem(n2,x2,"b");
title("X2[n] Graph");
```

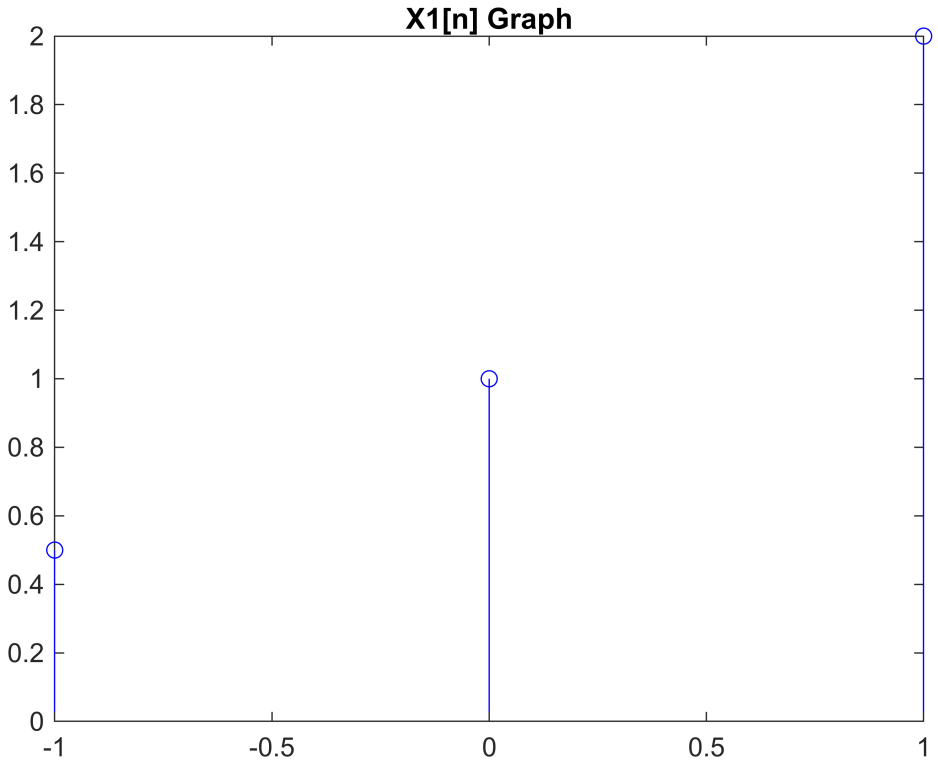



```
con = conv(x1,x2);
stem(con,"r");
title("Convolution Graph");
```

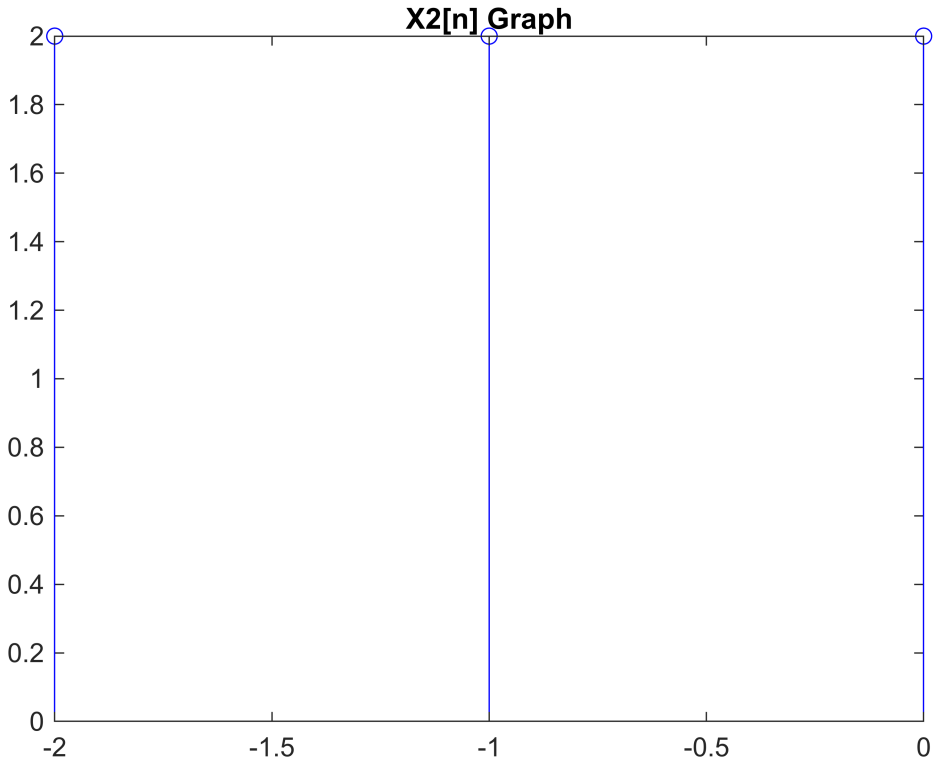


Question 2

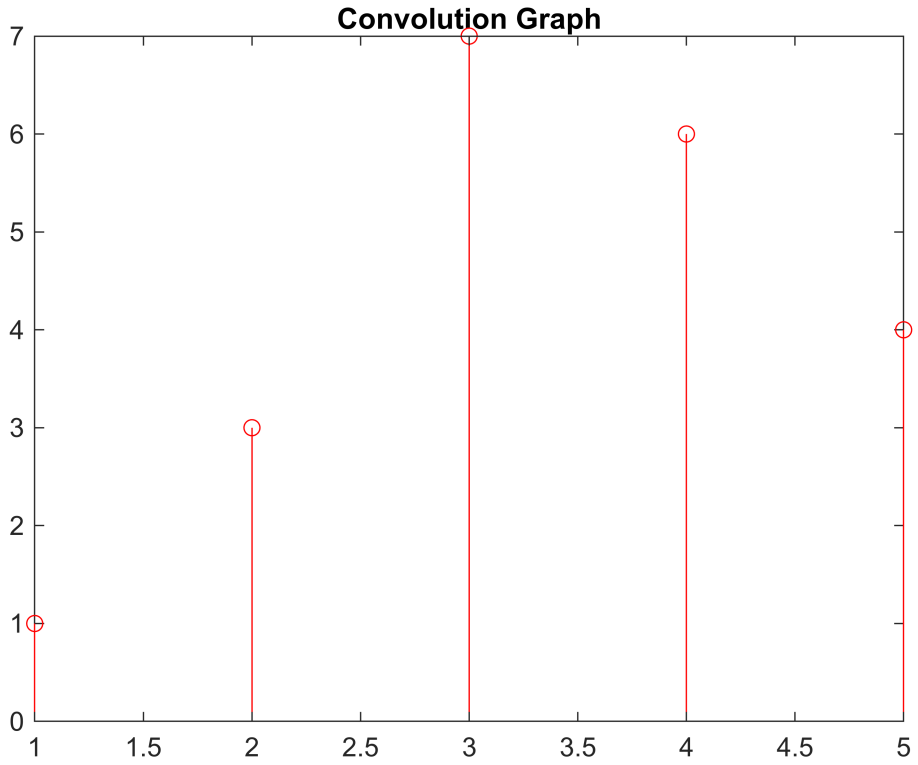
```
n1 = -1:1:1;
x1 = ((1/2).^(-n1)).*(unit(n1+1)-unit(n1-2));
stem(n1,x1,"b");
title("X1[n] Graph");
```




```
n2 = -2:1:0;
x2 = 2.*(unit(n2+2)-unit(n2-1));
stem(n2,x2,"b");
title("X2[n] Graph");
```

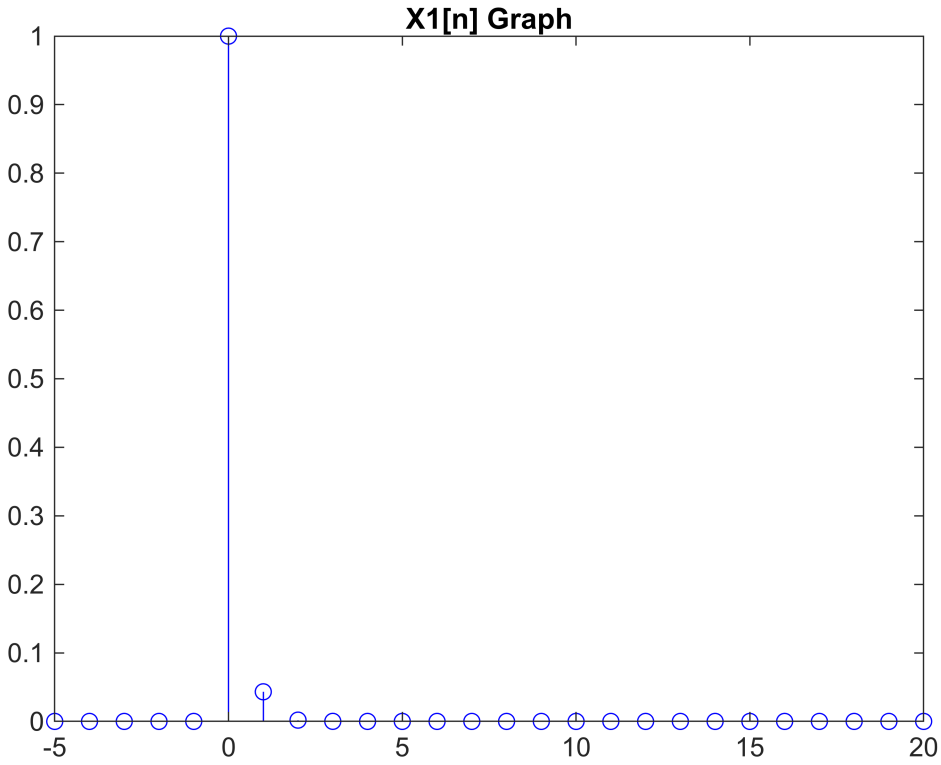



```
con = conv(x1,x2);
stem(con,"r");
title("Convolution Graph");
```

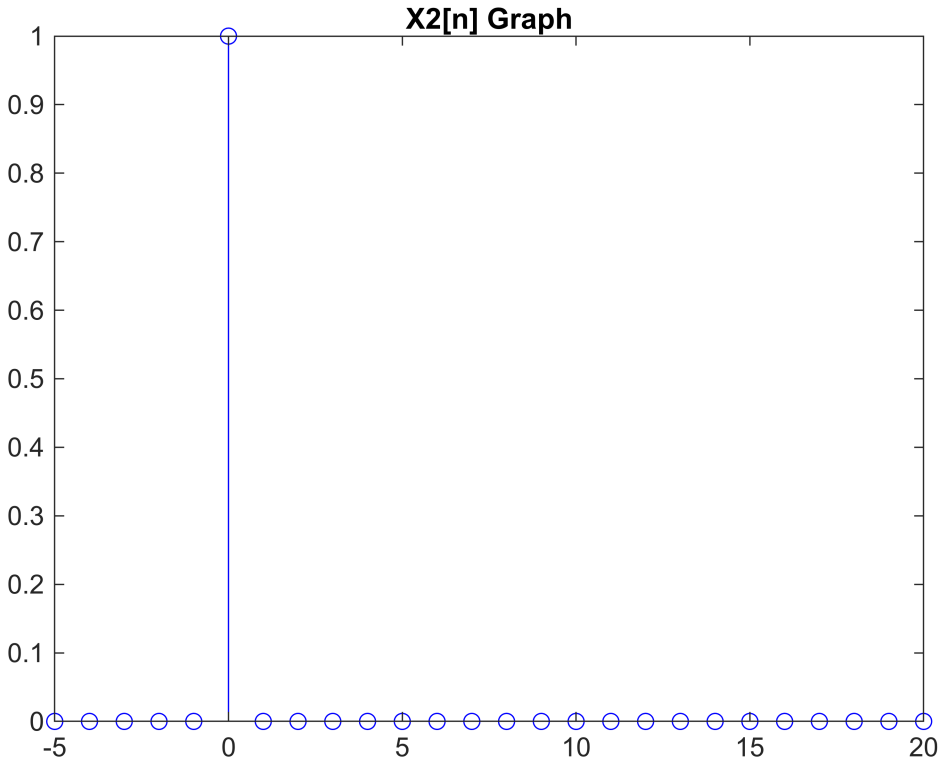


Question 3

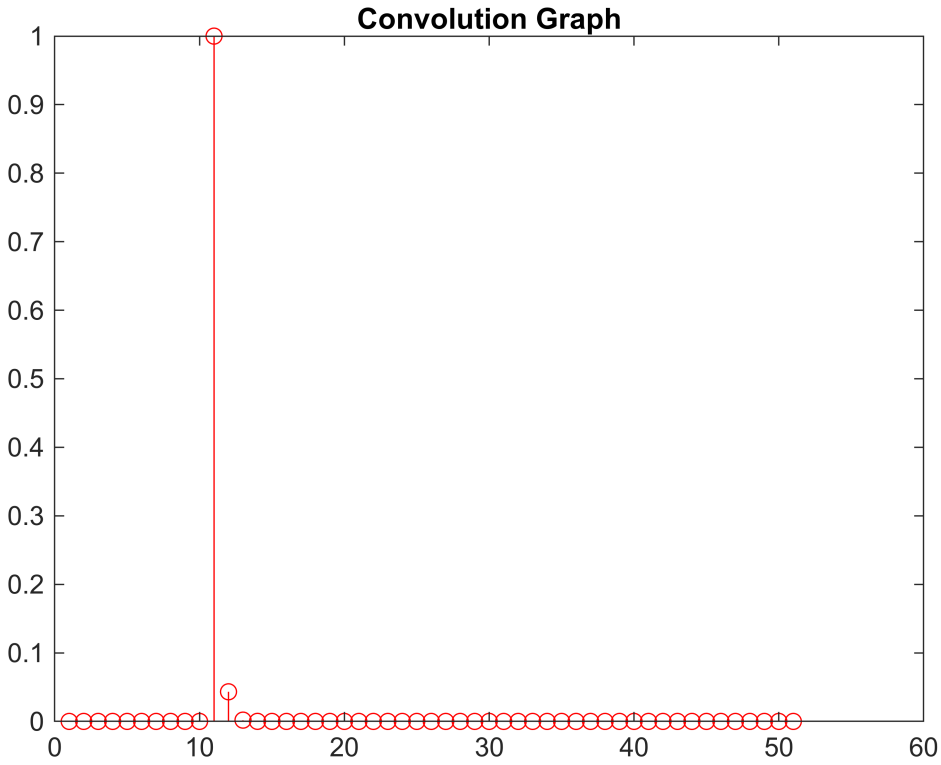
```
n1 = -5:1:20;
x1 = exp(-pi.*n1).*unit(n1);
stem(n1,x1,"b");
title("X1[n] Graph");
```




```
n2 = -5:1:20;
x2 = impluse(n2);
stem(n2,x2,"b");
title("X2[n] Graph");
```

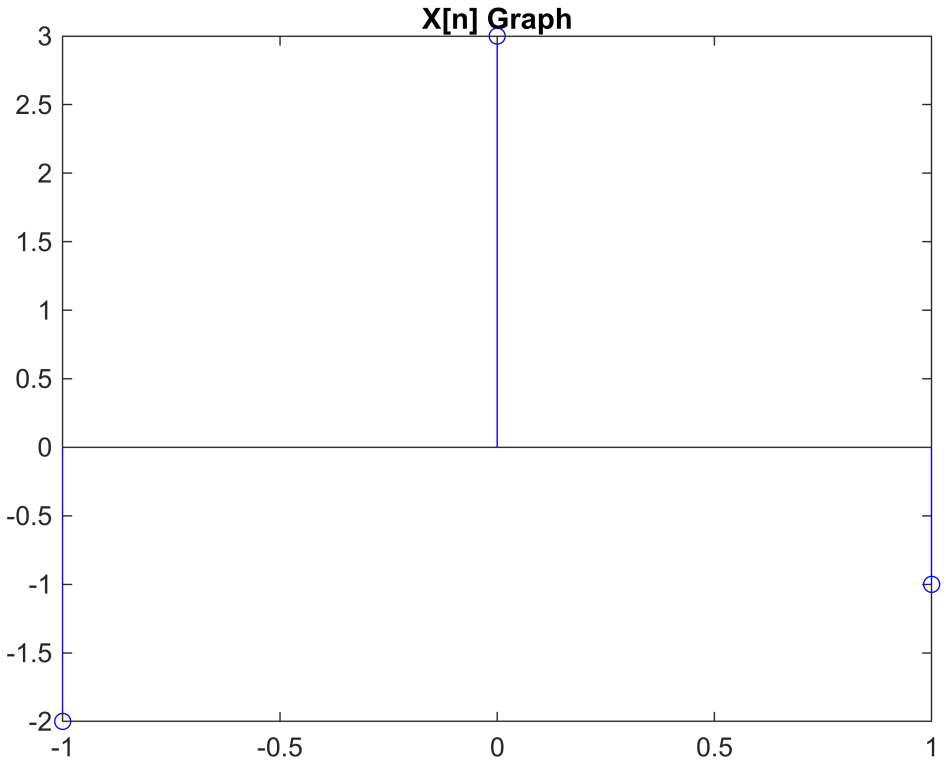



```
con = conv(x1,x2);
stem(con,"r");
title("Convolution Graph");
```

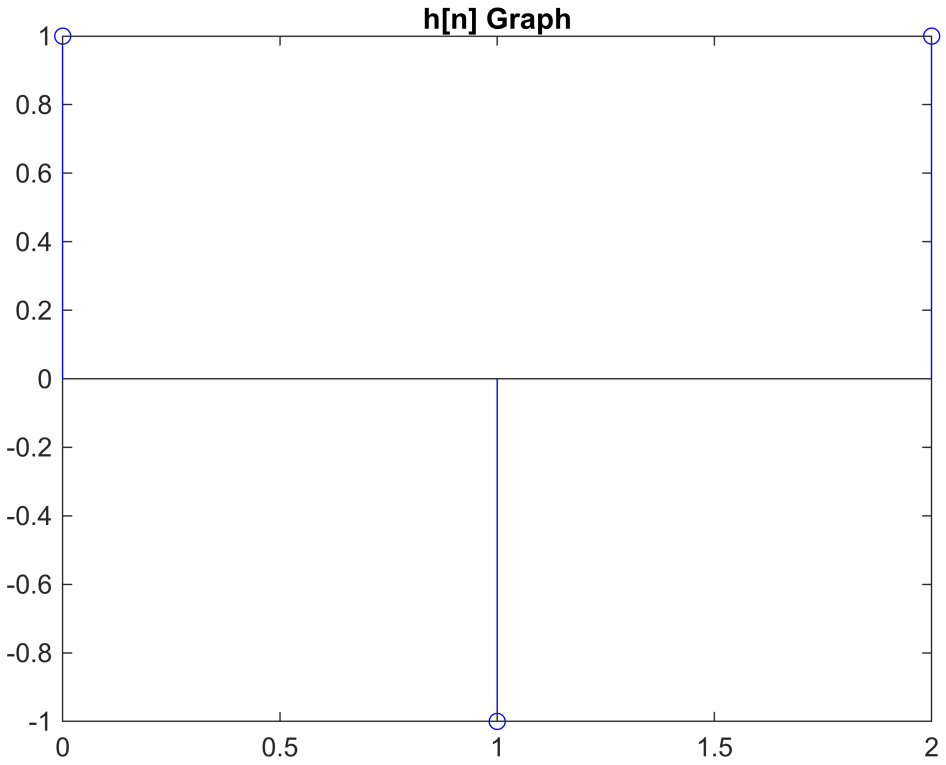


Question 4

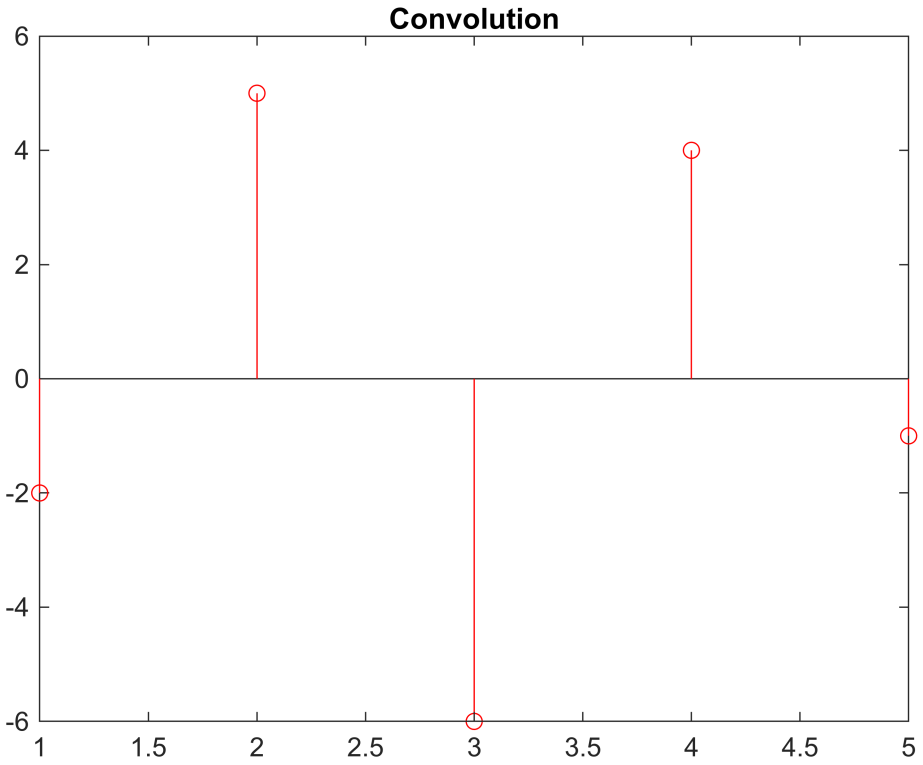
```
%x[n] = [1,-2,6,3,-3,-1,2]; range from -3 to 3
%x[2n] = [-2,3,-1] range from -1 to 1
x = [-2,3,-1];
nx = -1:1:1;
stem(nx,x,"b");
title("X[n] Graph");
```




```
%h[n] = [1,-1,1] range from -1 to 1
%h[n-1] = [1,-1,1] range from 0 to 2
h = [1,-1,1];
nh = 0:1:2;
stem(nh,h,"b");
title("h[n] Graph");
```




```
con = conv(x,h);
stem(con,"r");
title("Convolution");
```


Convolution
6
4
2
0
-2
-4
-6
1
1.5
2
2.5
3
3.5
4
4.5
5