
Table of Contents

| | |
|------------------------------|---|
| Eric Jiang - 158002948 | 1 |
| Problem 1 | 1 |
| Problem 2 | 3 |
| Problem 3 | 4 |
| Problem 4 | 7 |

Eric Jiang - 158002948

Lab 5 - Section C2 6/19/2017

```
close all; clc; clear;
```

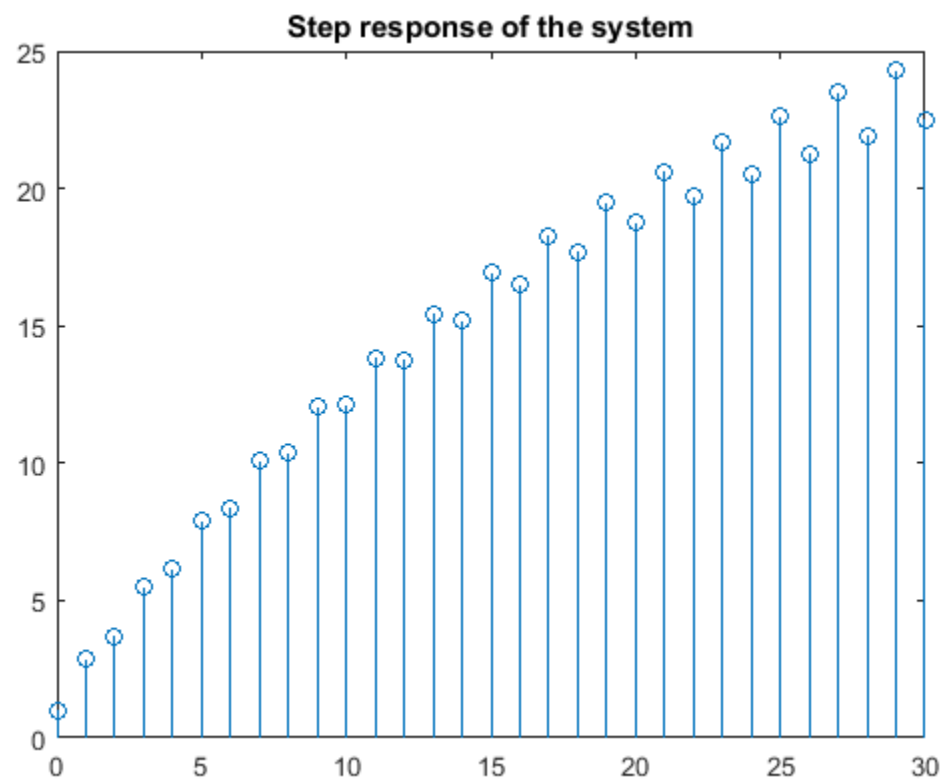
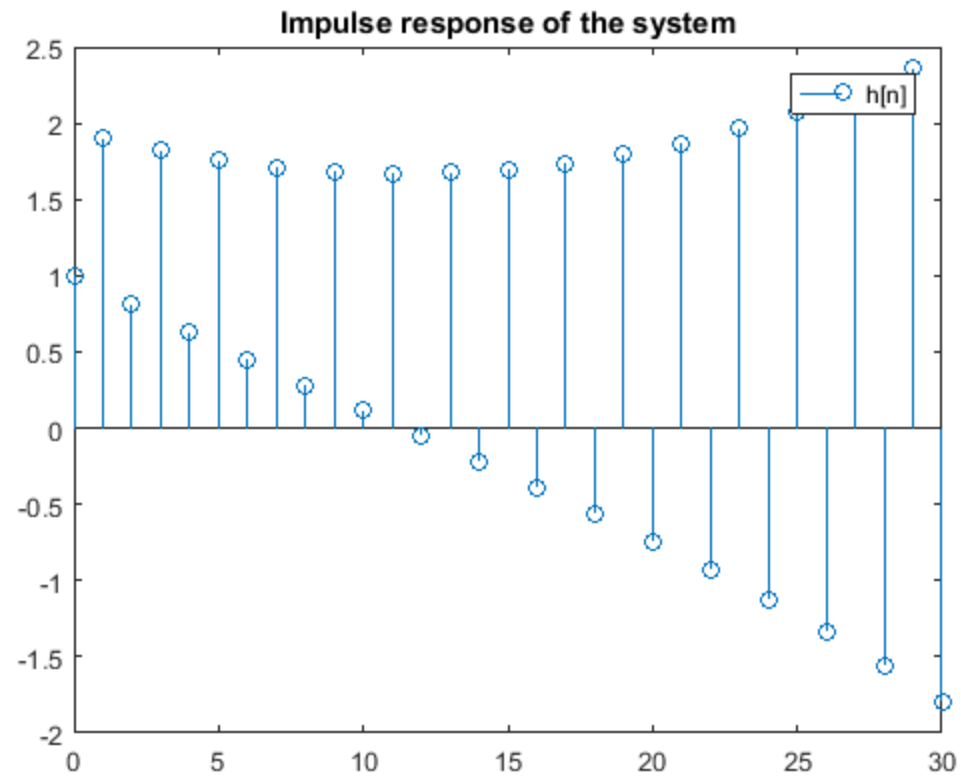
Problem 1

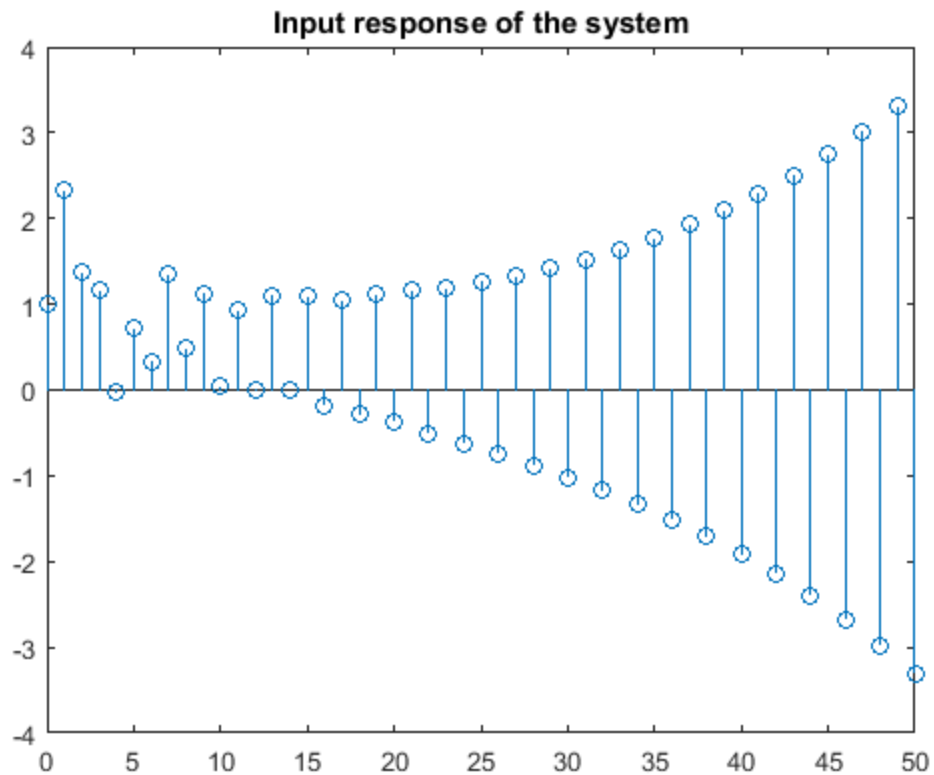
```
a = [1 0.1 -1];
b = [1 2];
n = 0:30;

% 1.1
figure;
x = [1,zeros(1,30)];
h = filter(b,a,x);
stem(n,h);
legend('h[n]');
title('Impulse response of the system')

% 1.2
figure;
u = ones(size(n));
s = filter(b,a,u);
stem(0:30,s);
title('Step response of the system')

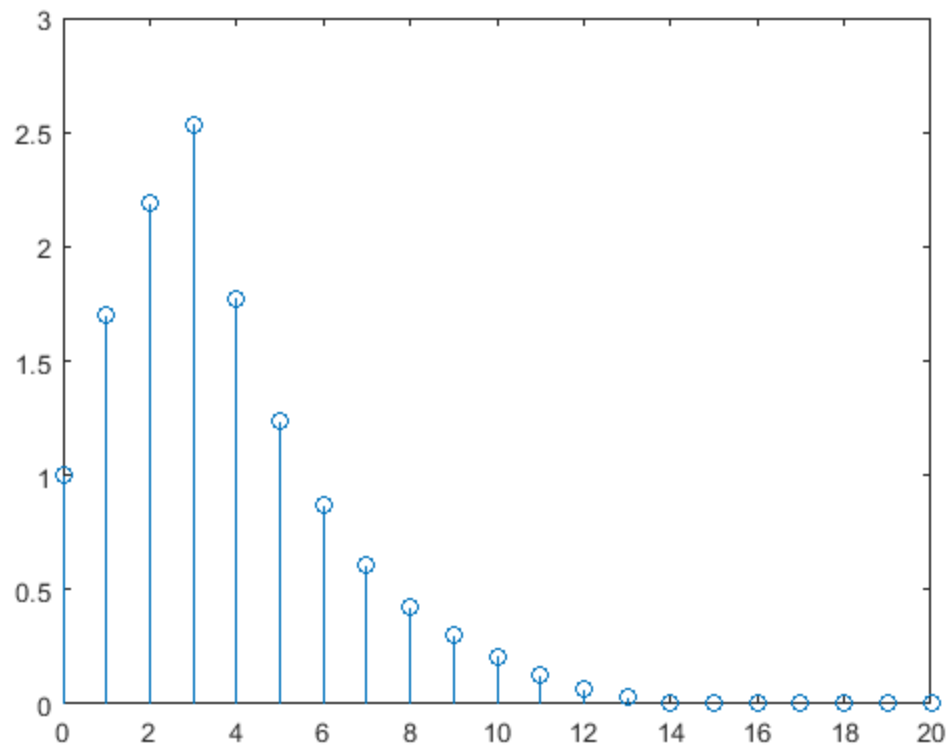
% 1.3
figure;
n = 0:50;
x = 0.8.^n.*cos(n);
y = filter(b,a,x);
stem(n,y);
title('Input response of the system')
```





Problem 2

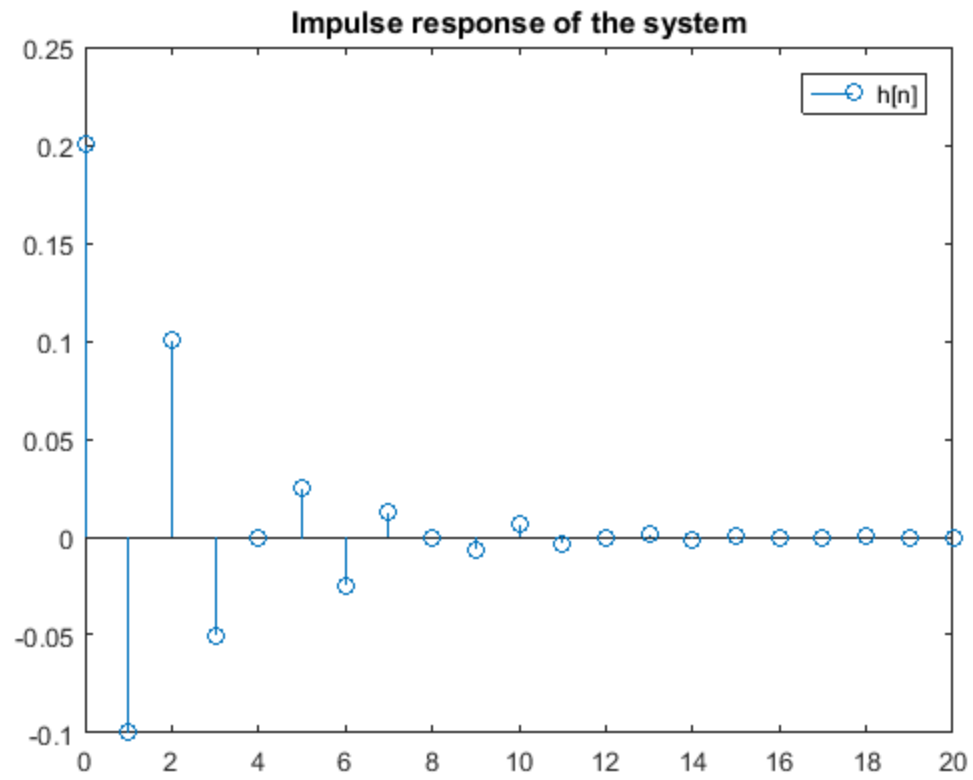
```
n = 0:10;  
h = 0.7.^n;  
x = [ones(1,4) zeros(1,7)];  
  
y = conv(x,h);  
figure;  
stem(0:20,y)
```

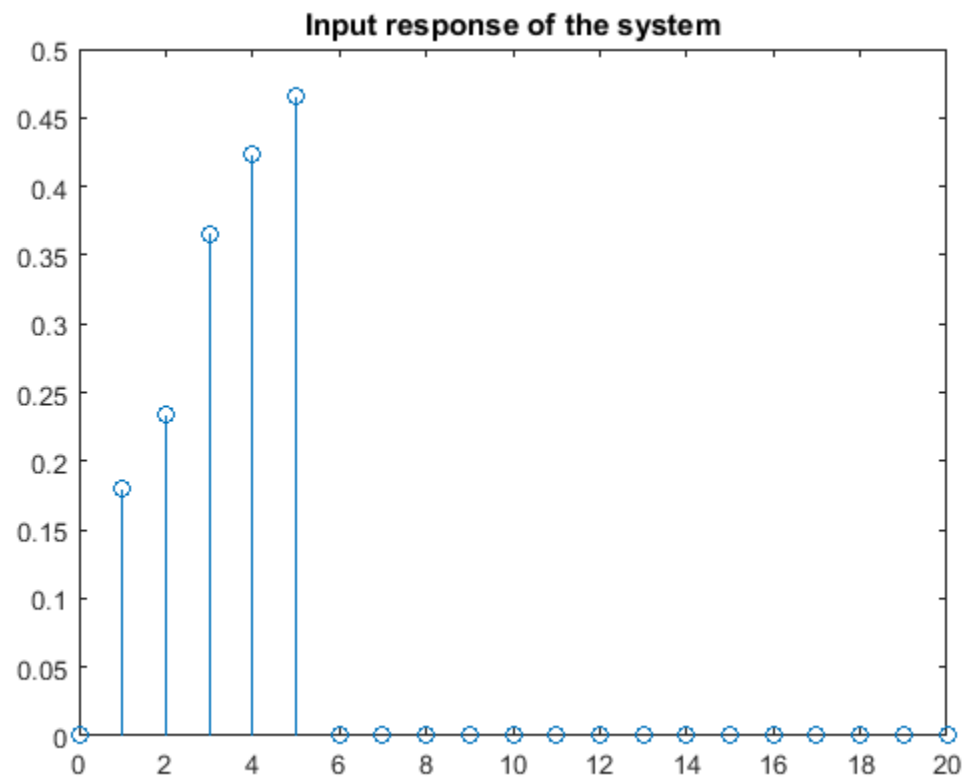
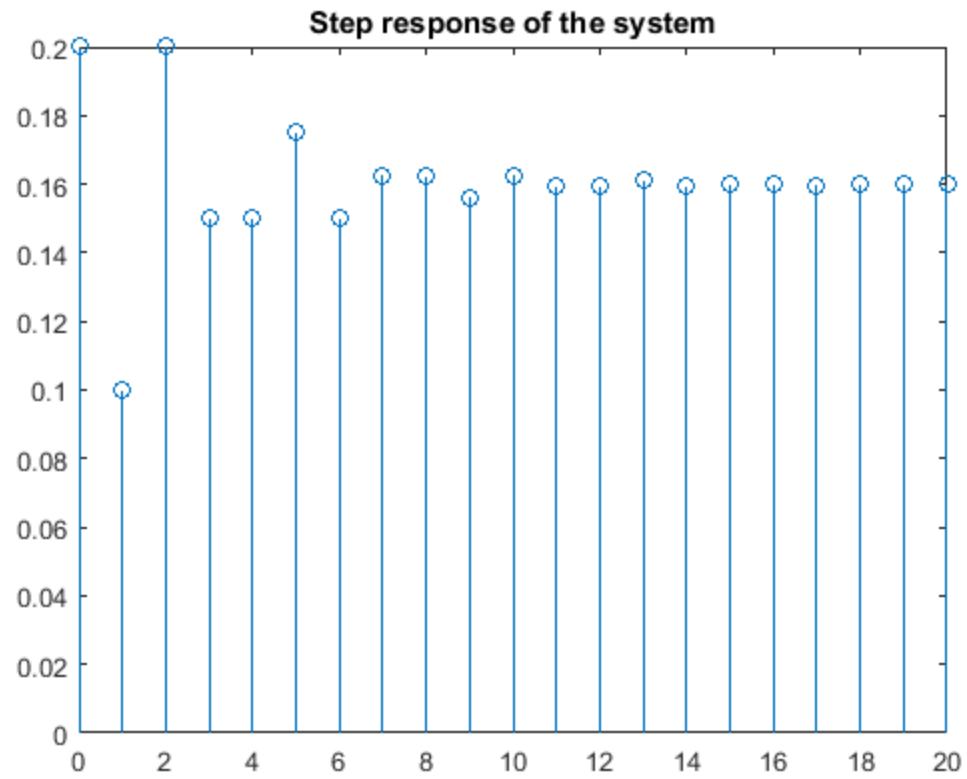


Problem 3

```
a = [1 1 0.5];  
b = [0.2 0.1 0.1];  
n = 0:20;  
  
% 3.1  
figure;  
x = [1,zeros(1,20)];  
h = filter(b,a,x);  
stem(n,h);  
legend('h[n]');  
title('Impulse response of the system')  
  
% 3.2  
figure;  
u = ones(size(n));  
s = filter(b,a,u);  
stem(n,s);  
title('Step response of the system')  
  
% 3.3  
figure;  
n1 = 0:5;  
x = n1.*0.9.^n1;
```

```
y = filter(b,a,x);  
y1 = [y zeros(1,15)];  
stem(n,y1);  
title('Input response of the system')  
xlim([0 20])
```





Problem 4

```
n = 0:2;  
h1 = [2,3,4];  
h2 = [-1,3,1];  
h3 = [1,1,-1];
```

```
% 4.1  
h = conv((h1+h2),h3)
```

```
% 4.2  
x = [ones(1,2) zeros(1,3)];  
y = conv(h,x)
```

$h =$

1 7 10 -1 -5

$y =$

1 8 17 9 -6 -5 0 0 0

Published with MATLAB® R2016a