Contents


```
clear; clc;
```

Problem 2 - b,c

```
A  = 1;     %Amplitude - A <= 1 to avoid clipping
f1 = 0.3;  %normalized frequency
seq_length = 4; %seconds
Fss = [1000, 3000, 6000, 12000];  %Hz
for Fs=Fss
    n_samples = seq_length*Fs;
    x = zeros(1, n_samples);

    % generate audio-vector
    for i=1:n_samples
        x(i) = A*cos(2*pi()*f1*i);
    end

    audiowrite(strcat('Fs_',int2str(Fs),'.wav'), x, Fs);
end
```

Problem 2 - d

```
A  = 1;     %Amplitude - A <= 1 to avoid clipping
seq_length = 4; %seconds
Fs = 8000; % sampling frequency
F_list  = [1000, 3000, 6000]; % physical frequency
f_list  = F_list./Fs;

% normalize f_list from -0.5 to 0.5
f_list = mod(f_list + 0.5, 1) - 0.5;


n_samples = seq_length*Fs;
x = zeros(1, n_samples);
for f=f_list
    % generate audio-vector
    for i=1:n_samples
        x(i) = A*cos(2*pi()*f*i);
    end

    audiowrite(strcat('f_',num2str(f),'.wav'), x, Fs);
end
```

Problem 5 - b

```
x = 1:3;
```

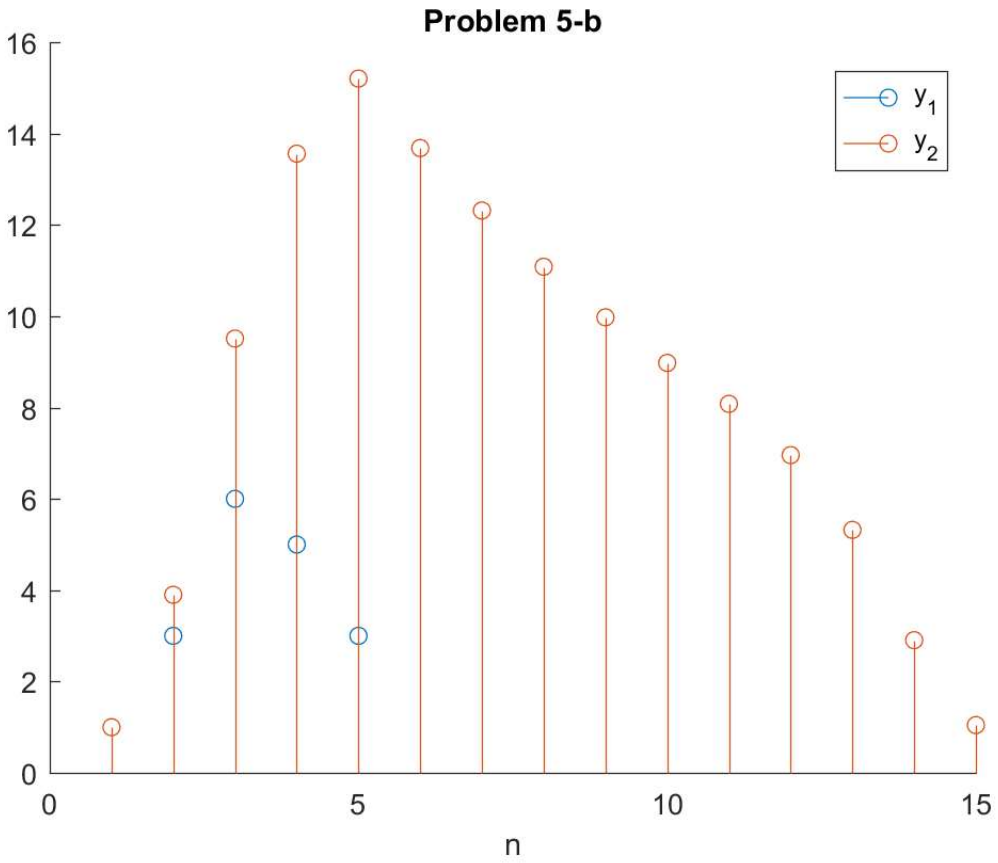
```
h1 = [1 1 1];
h2 = 0.9.^(0:10);


y1 = conv(x,h1)
y2 = conv(y1,h2);

figure; hold on;
stem(y1);
stem(y2);
title('Problem 5-b'); xlabel('n'); legend('y_1', 'y_2');
```

```
y1 =

     1     3     6     5     3
```

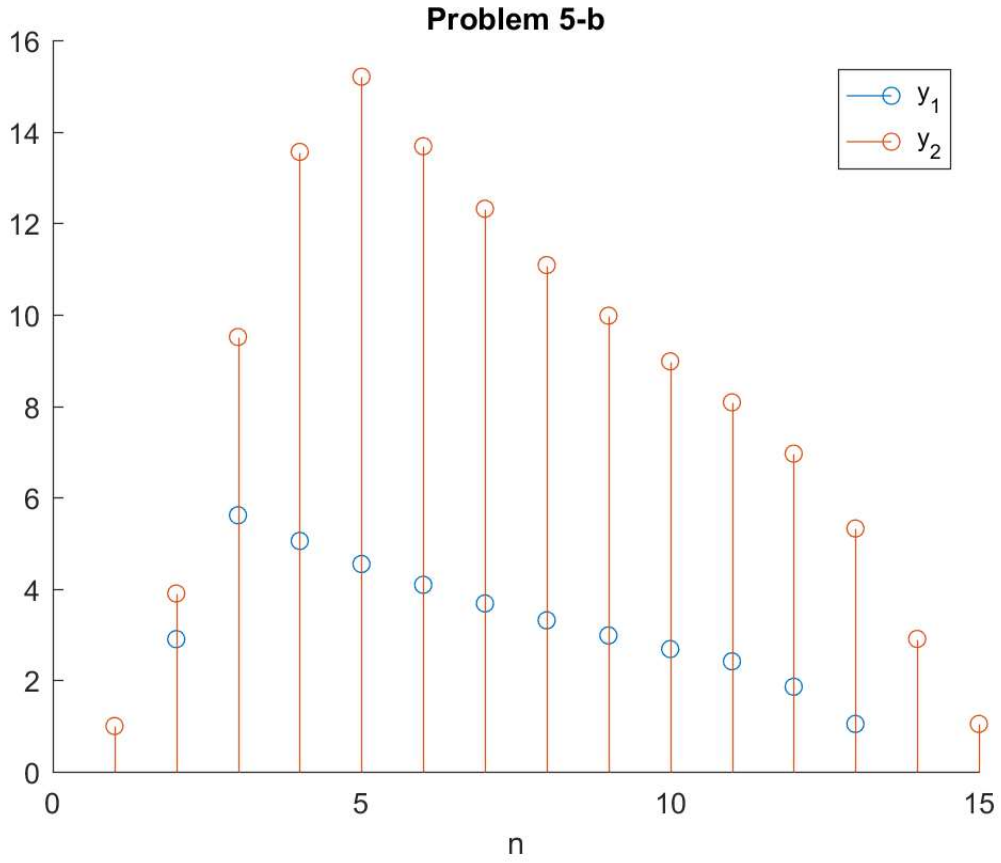


Problem 5 - d

```
x = 1:3;
h1 = [1 1 1];
h2 = 0.9.^(0:10);

% order is changed here and y1 is now output after h2 transform
y1 = conv(x,h2);
y2 = conv(y1,h1);

figure; hold on;
stem(y1);
stem(y2);
title('Problem 5-b'); xlabel('n'); legend('y_1', 'y_2');
```



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