# HomeWork_2020f (MATLAB Signal & System) - Part #3

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Q 1-1 : 3.104 [15] Use MATLAB's fft command to repeat Problem 3.48 (a)

-- < CODE > ---

```
%% HomeWork #3_1
% 3.104 [15] Use MATLAB's fft command to repeat Problem 3.48 (a,c,e)

clear all

n=0:16; % N = 17
x=cos(6*n*pi/17+pi/3);
X=fft(x)/17;
mag_X =abs(X);
phase_X =angle(X);

%plot(n-8, mag_X)
%xlabel("x")
%ylabel("mag_X")
%title(["HomeWork #3_1_a mag_X"])
%axis([-8 8 -3 3])

plot(n-8, phase_X)
xlabel("x")
ylabel("phase_X")
title(["HomeWork #3_1_a phase_X"])
axis([-8 8 -3 3])
```
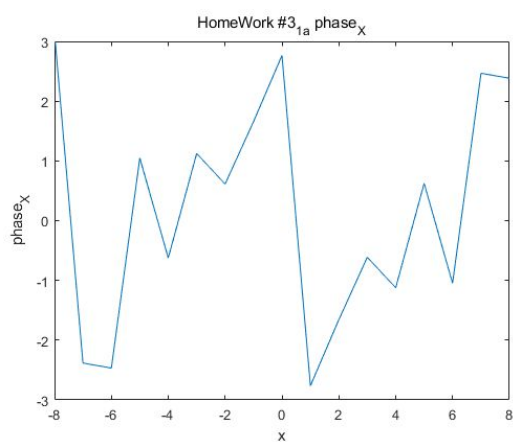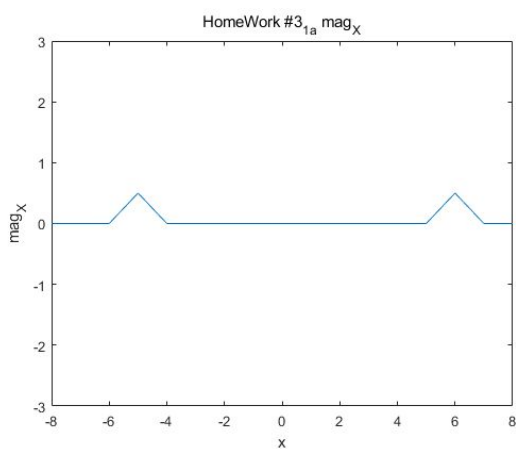

Q 1-2 : 3.104 [15] Use MATLAB's fft command to repeat Problem 3.48 (c)

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```
%% HomeWork #3_1
% 3.104 [15] Use MATLAB's fft command to repeat Problem 3.48 (c)

clear all

n = -5:6; % N = 12
x = 0;
for i=0:11
    impulse1 = n==2*i;
    impulse2 = n==(-3)*i;
    x = x + (impulse1 + impulse2)*power(-1, i);
end
X=fft(x)/12;
mag_X =abs(X);
phase_X =angle(X);

%plot(n, mag_X)
%xlabel("x")
%ylabel("mag_X")
%title(["HomeWork #3_1_c mag_X"])
%axis([-5 6 -1 1])

plot(n, phase_X)
xlabel("x")
ylabel("phase_X")
title(["HomeWork #3_1_c phase_X"])
axis([-5 6 -4 4])
```
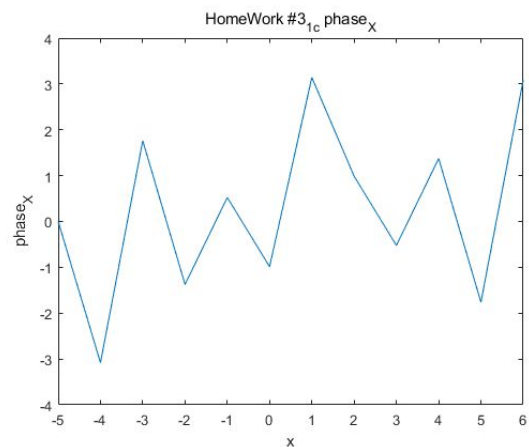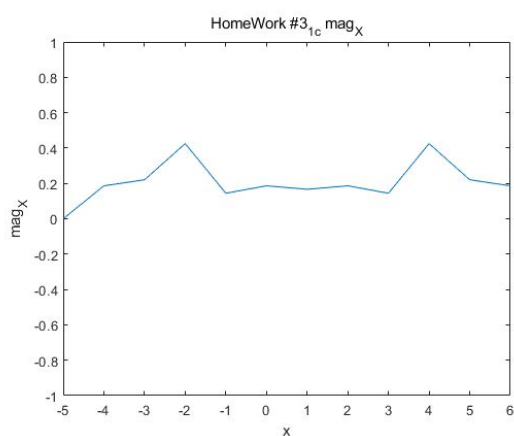
Q 1-3 : 3.104 [15] Use MATLAB's fft command to repeat Problem 3.48 (e)

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```
%% HomeWork #3_1
% 3.104 [15] Use MATLAB's fft command to repeat Problem 3.48 (e)

clear all

n = -5:4; % N = 10
for i=0:9
   if (0 <= i) && (i <= 5)
      x = 1/5*i;
   else
      x = 0;
   end
   y(i+1) = x;
end
X=fft(y)/10;
mag_X =abs(X);
phase_X =angle(X);

plot(n, mag_X)
xlabel("x")
ylabel("mag_X")
title(["HomeWork #3_1_e mag_X"])
axis([-5 4 -1 1])

%plot(n, phase_X)
%xlabel("x")
%ylabel("phase_X")
%title(["HomeWork #3_1_e phase_X"])
%axis([-5 4 -4 4])
```