

Ödevimi kendi çabamla ve araştırmalarım ile
hazırladığımı ve yararlandığım kitap, ders, internet
sitesi gibi kaynakları referans olarak belirttiğimi
beyan ederim. Ayrıca bu ödevin bir parçasının veya
tamamının kopyalanmadığını beyan ederim.

Yigit Bektaş Gürsoy

040180063

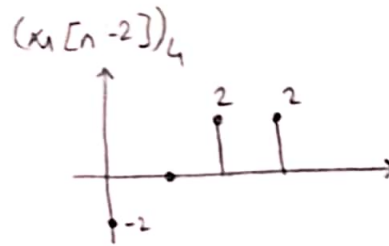
[Signature]

Kaynakça: Uygulamalar
Matlab datasheet
Ders notları

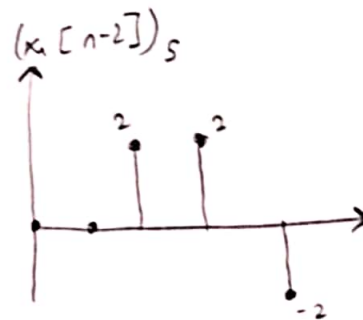
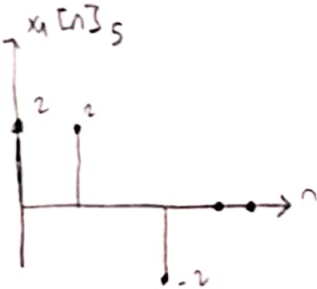
1- $x_1[n] = 2\delta[n] - 2\delta[n-1] - 2\delta[n-2]$

$x_2[n] = 2\delta[n] - \delta[n-1] + 3\delta[n-2] - \delta[n-3]$

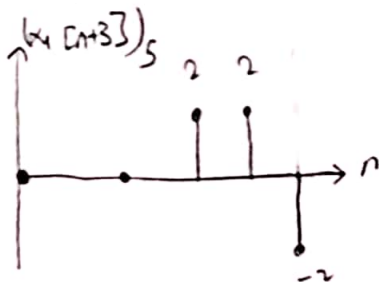
a- $(x_1[n-2])_4$



b- $(x_1[n-2])_5$



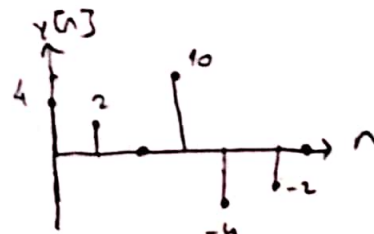
c- $(x_1[n+3])_5$



d- $y_1[n] = x_1[n] * x_2[n]$



n	0	1	2	3	4	5	6
y[n]	4	2	0	10	-4	-2	0

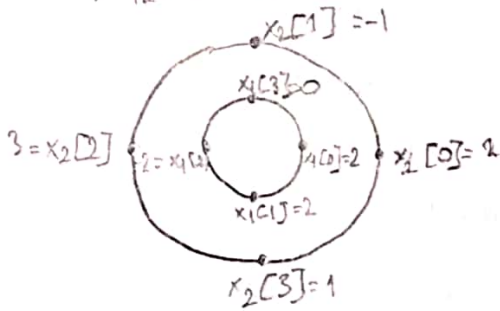


Yigit Bektaş Gürsoy

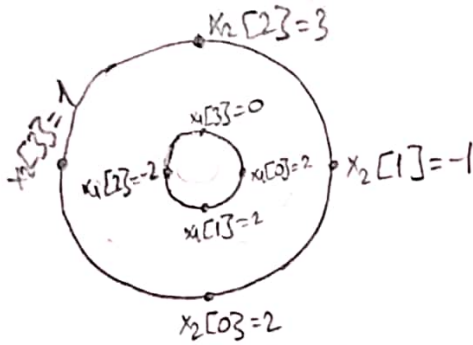
04.08.2003

Yigit

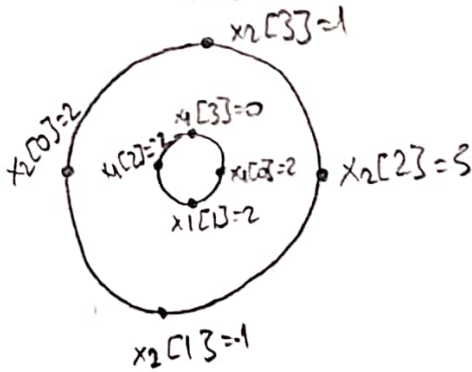
e) $y_2[n] = x_1[n] \otimes x_2[n]$



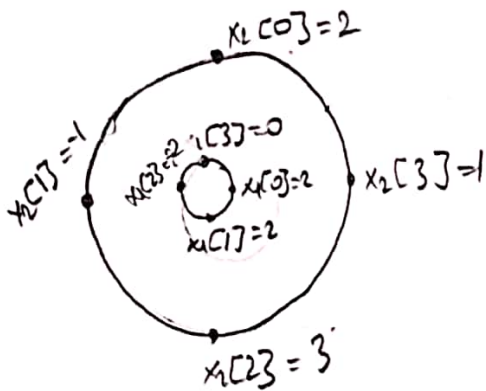
$y_2[0] = 4 + 2 - 6 + 0 = 0$



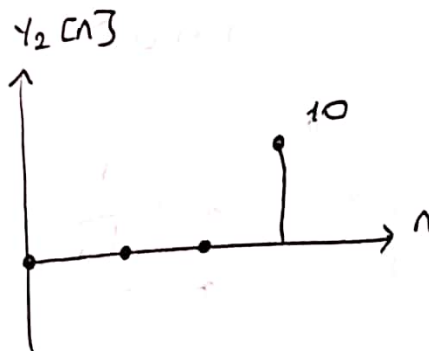
$y_2[1] = -2 + 4 - 2 + 0 = 0$



$y_2[2] = 6 + 0 - 2 - 4 = 0$



$y_2[3] = 2 + 6 + 2 = 10$



$$2-) x[n] = 2.5 \delta[n] + \delta[n-2] - 2 \delta[n-4]$$

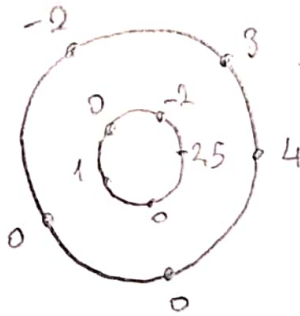
$$h[n] = 4 \delta[n] + 3 \delta[n-1] - 2 \delta[n-2]$$

5 noktalı :

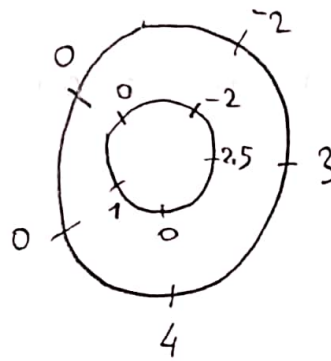
Yigit Betas Gurses

040180063

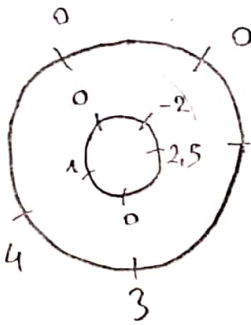
[Signature]



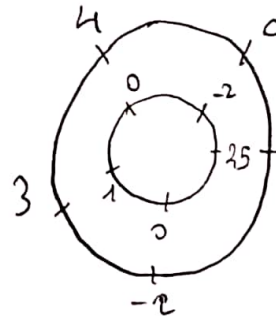
$$(y[0])_5 = 4$$



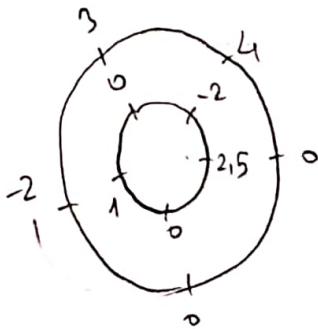
$$(y[1])_5 = 11.5$$



$$(y[2])_5 = -1$$

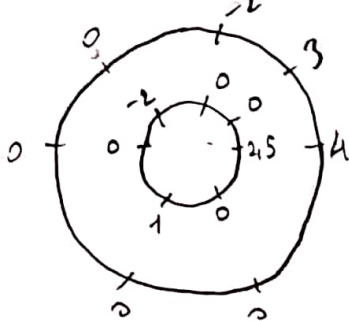


$$(y[3])_5 = 3$$

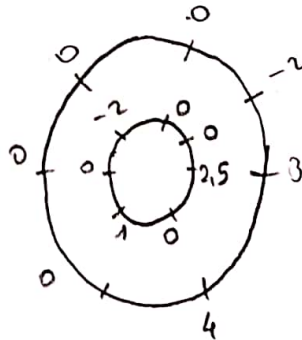


$$(y[4])_5 = -8 - 2 = -10 \quad (y[n])_5 = \{4, 11.5, -1, 3, -10\}$$

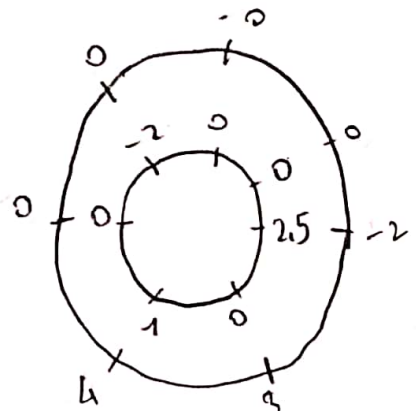
7 noktalı



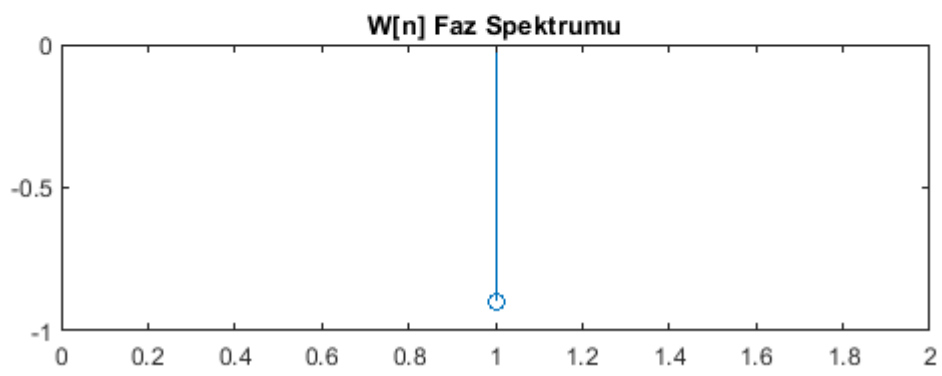
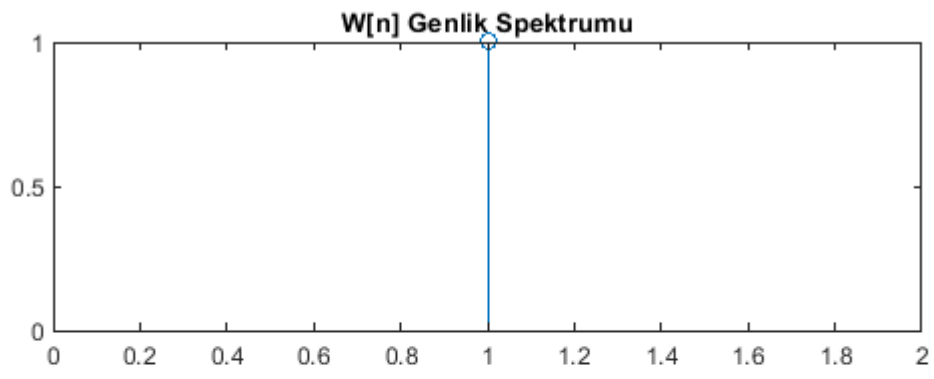
$$(y[0])_7 = 10$$

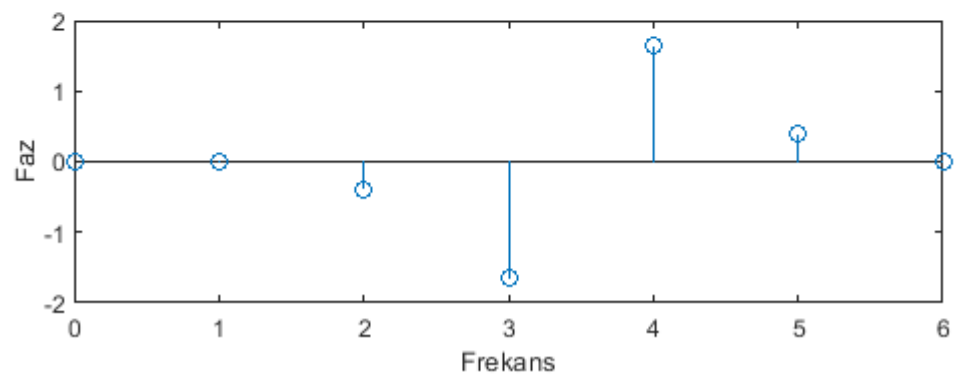
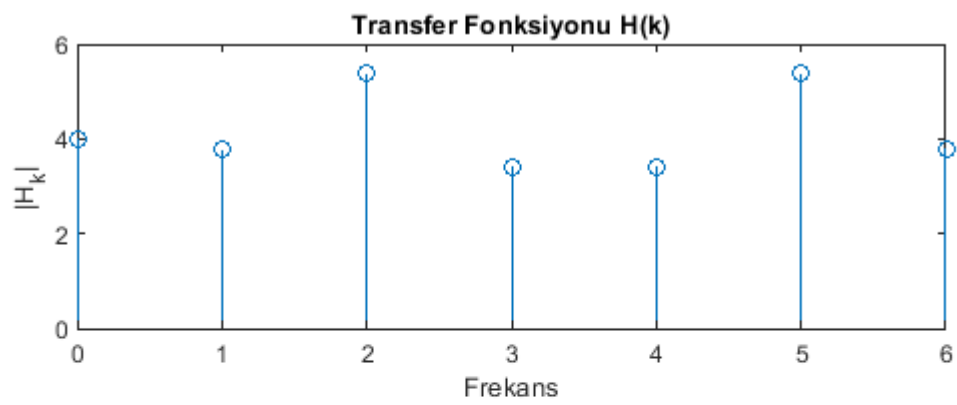
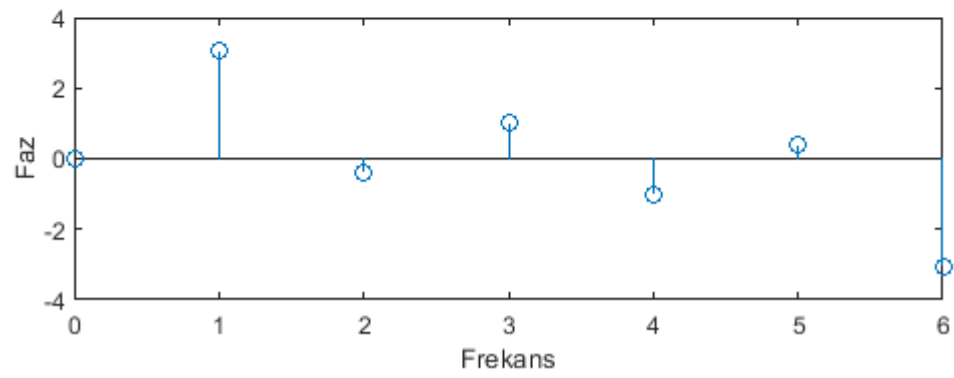
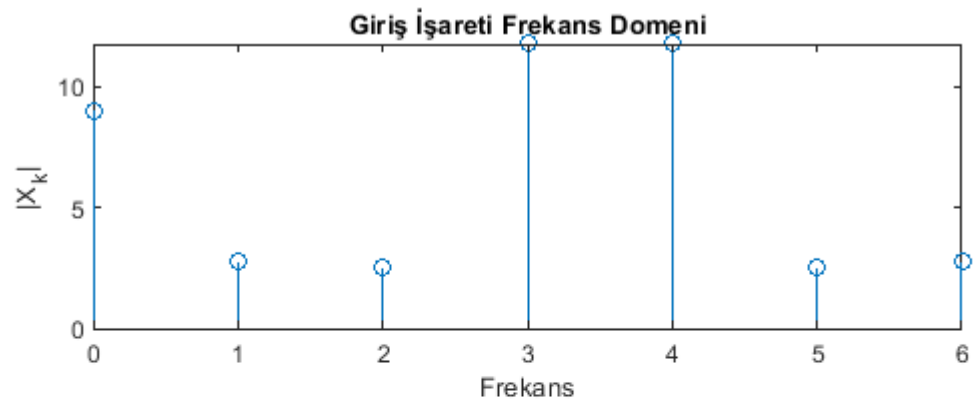


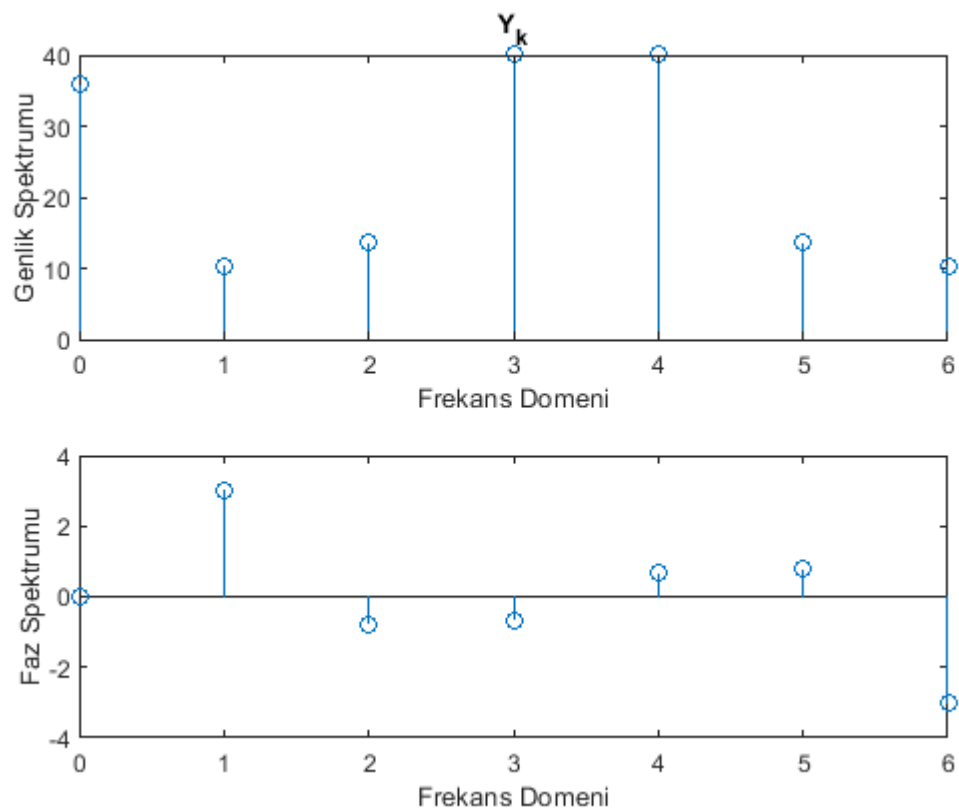
$$(y[1])_7 = 7.5$$



$$(y[2])_7 = -1$$







```
y_func =

Columns 1 through 6

14.0000 + 0.0000i    0.0000 + 0.0000i    2.0000 - 0.0000i    12.0000 - 0.0000i    3.0000 + 0.0000i    16.0000 - 0.0000i

Column 7

-11.0000 + 0.0000i
```

```
% Sayısal İşaret İşleme
% Ödev-2
% Yiğit Bektaş GÜRSOY
% 040180063
```

```
%% a)  $x[n]$  işaretini tanımlayınız.
```

```
x = [3, -2, 4, -1, 5];
t1 = 0:length(x)-1;
N1 = length(x);
```

```
% b)  $h[n]$  işaretini tanımlayınız
```

```
h = [3, 2, -2, 1];
t2 = 0:length(h)-1;
N2 = length(h);
figure;
```

```
% c)  $N=7$  olmak üzere  $W_7$  çizdirin.
```

```
N = 7;
W = exp(-1i*2*pi/N);
W_genlik = abs(W);
subplot(2,1,1), stem(W_genlik), title("W[n] Genlik Spektrumu");
```

```
W_faz = angle(W);
figure;
subplot(2,1,2), stem(W_faz), title("W[n] Faz Spektrumu");
```

```
% d)  $x[n]$  için AFD
```

```
x_zero = zeros(1,N-N1);
X_k = zeros(N,1);
if (N1 < N)
    x = [x,x_zero];
end
for k = 0:N-1
    for n = 0:N-1
        X_k(k+1) = X_k(k+1) + x(n+1)*exp(-1i*2*pi*n*k/N);
```



```

    end
end
t = 0:length(X_k)-1;
figure;

subplot(2,1,1)
stem(t,abs(X_k))
xlabel("Frekans")
ylabel("|X_k|")
title("Giriş İşareti Frekans Domeni")

subplot(2,1,2)
stem(t,angle(X_k))
xlabel("Frekans")
ylabel("Faz")

%% e) h[n] için AFD

h_zero = zeros(1,N-N2);
H_k = zeros(N,1);

if (N2 < N)
    h = [h,h_zero];
end

for k = 0:N-1
    for n = 0:N-1
        H_k(k+1) = H_k(k+1) + h(n+1)*exp(-1i*2*pi*n*k/N);
    end
end
t3 = 0:length(H_k)-1;
figure;

subplot(2,1,1)
stem(t3,abs(H_k))
xlabel("Frekans")
ylabel("|H_k|")
title("Transfer Fonksiyonu H(k)")

subplot(2,1,2)
stem(t3,angle(H_k))
xlabel("Frekans")
ylabel("Faz")

%% f) Y_k = H_k * X_k

```

```

Y_k = H_k .* X_k;
t4 = 0:length(Y_k)-1;
figure;

subplot(2,1,1)
stem(t4,abs(Y_k))
xlabel("Frekans Domeni")
ylabel("Genlik Spektrumu")
title("Y_k")

subplot(2,1,2)
stem(t4,angle(Y_k))
xlabel("Frekans Domeni")
ylabel("Faz Spektrumu")

% g) Ters AFD, y[n]
y = zeros(1,N);
for k = 0:N-1
    for n = 0:N-1
        y(n+1) = y(n+1) + Y_k(k+1)*exp(1i*2*pi*n*k/N);
    end
end
y_func = y/N;

```