Laboratorium nr. 11

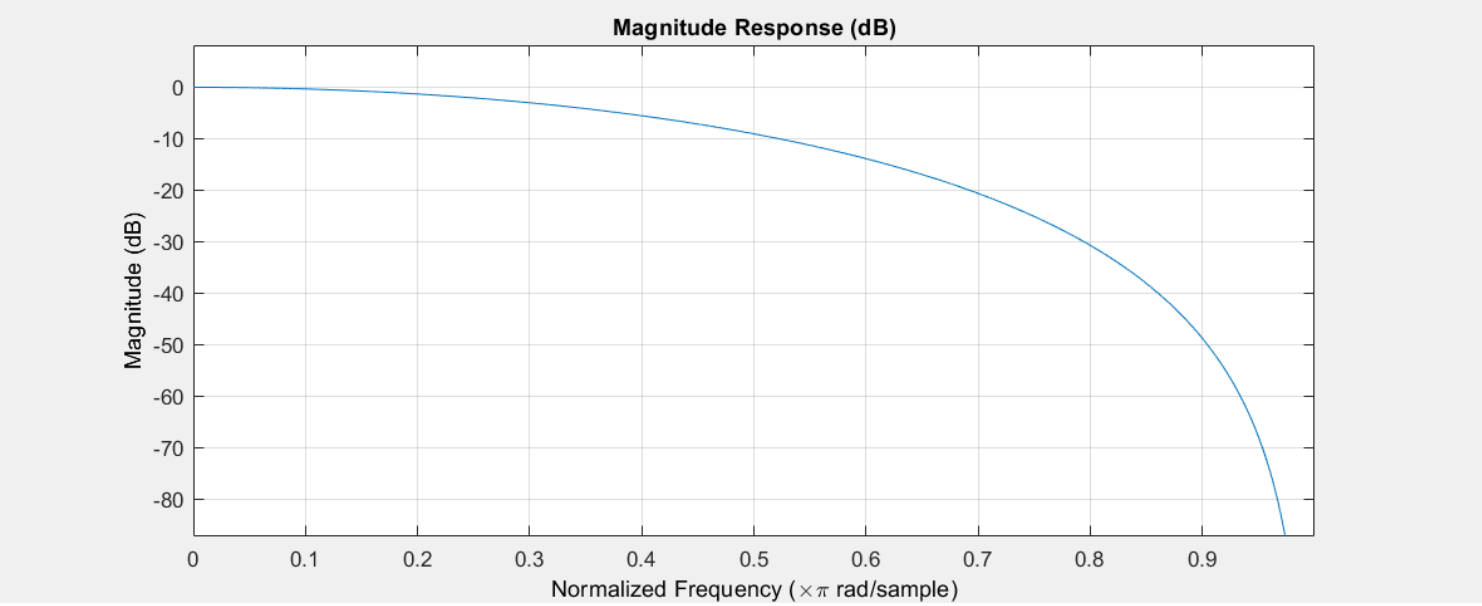
Przetwarzanie sygnałów cyfrowych

Filip Pasternak, grupa lab. 7, piątek 18:30

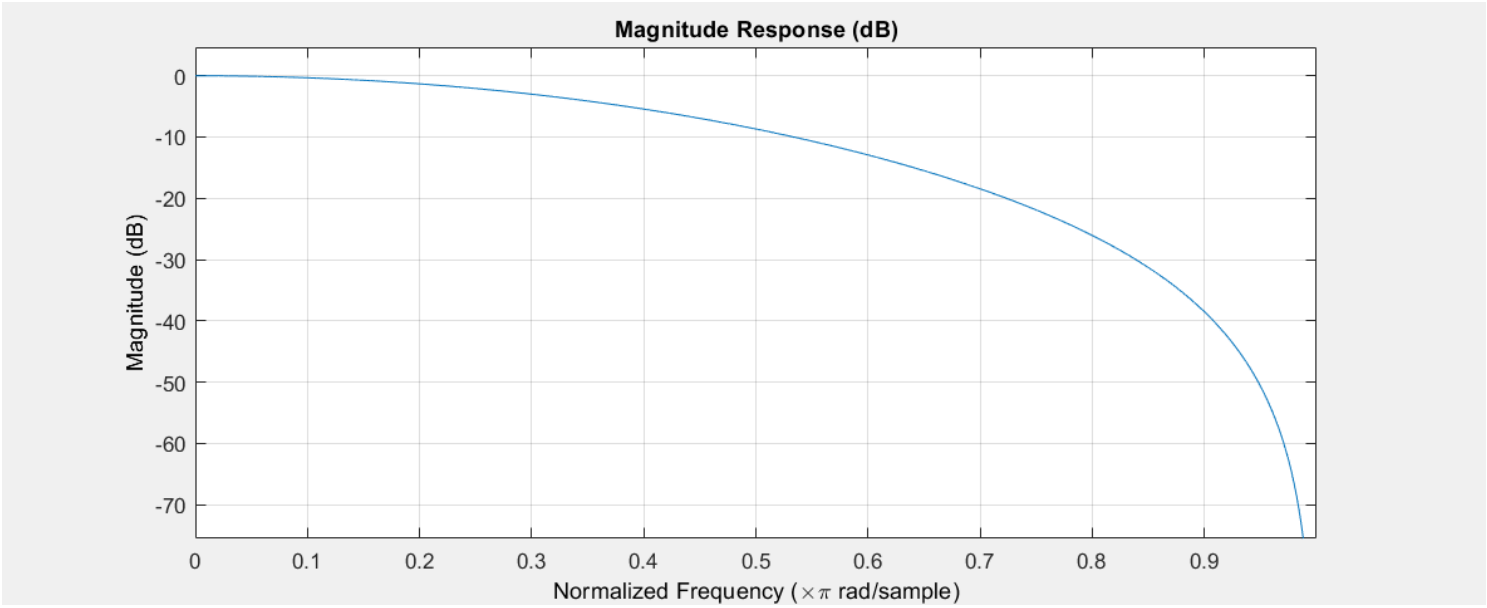
Zadanie 1

```
clear all

%1
[b,a] = maxflat(4,1,0.3);
fvtool(b,a);
```




```
%2
[b, a] = maxflat(4,'sym',0.3);
fvtool(b,a);
```



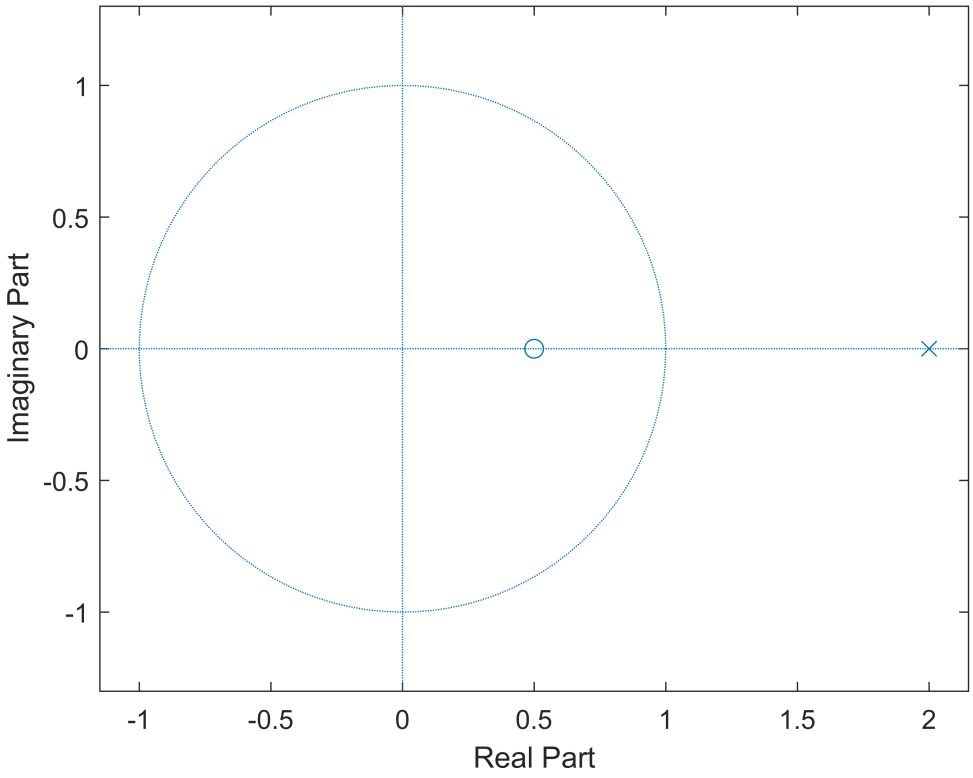
Zadanie 2

```
clear all

b = [1 -0.5];
a = [1 -2];
act_flag1 = isstable(b,a)
```

```
act_flag1 = logical
   0
```

```
zplane(b,a)
```



Wynik flag = 0 oznacza, że filtr jest niestabilny

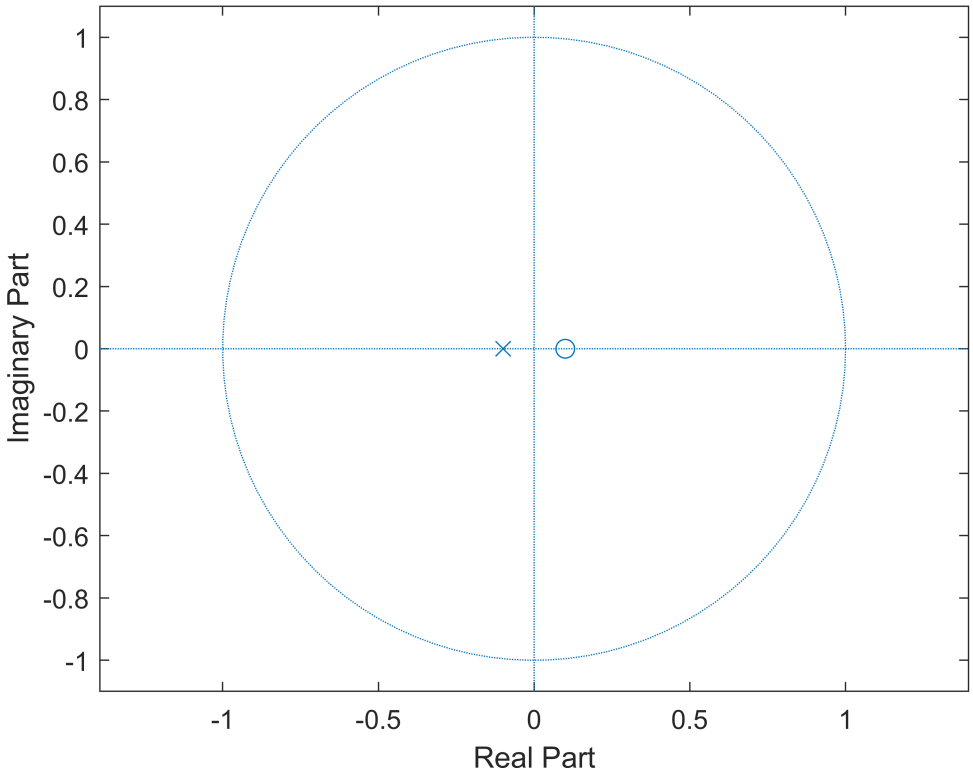
Zadanie 3

```
clear all

b = [1 -0.1];
a = [-1 -0.1];
act_flag1 = isstable(b,a)
```

```
act_flag1 = logical
   1
```

```
zplane(b,a)
```



Wynik flag = 1 oznacza, że filtr jest stabilny

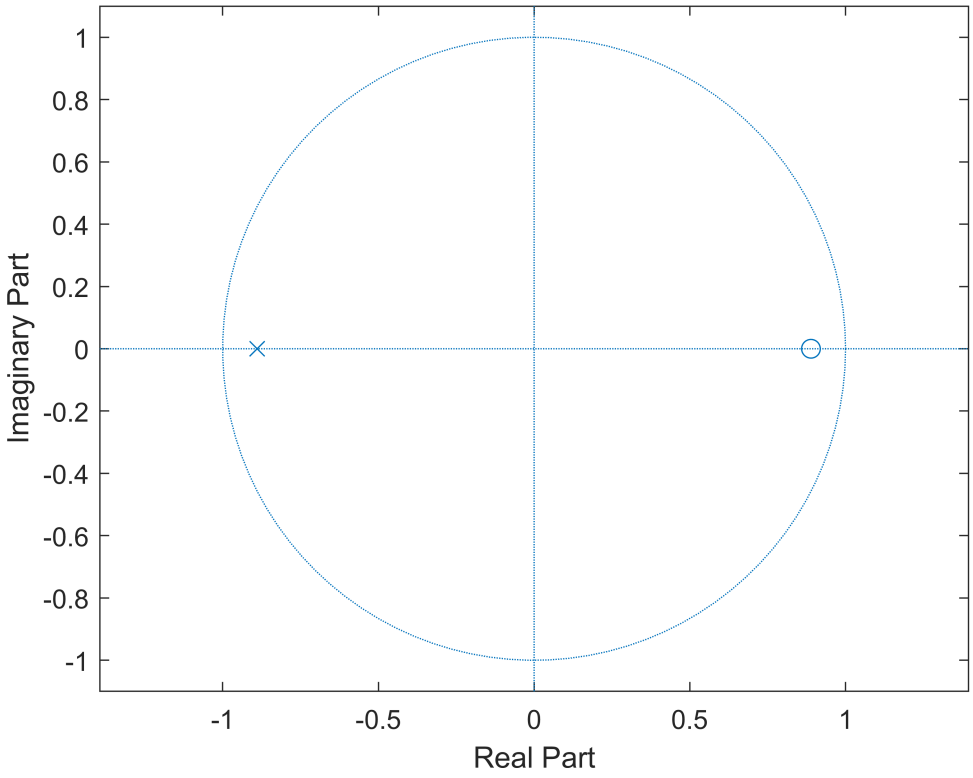
Zadanie 4

```
clear all

b = [0.9 -0.8];
a = [-0.9 -0.8];
act_flag1 = isstable(b,a)
```

```
act_flag1 = logical
   1
```

```
zplane(b,a)
```



Wynik flag = 1 oznacza, że filtr jest stabilny

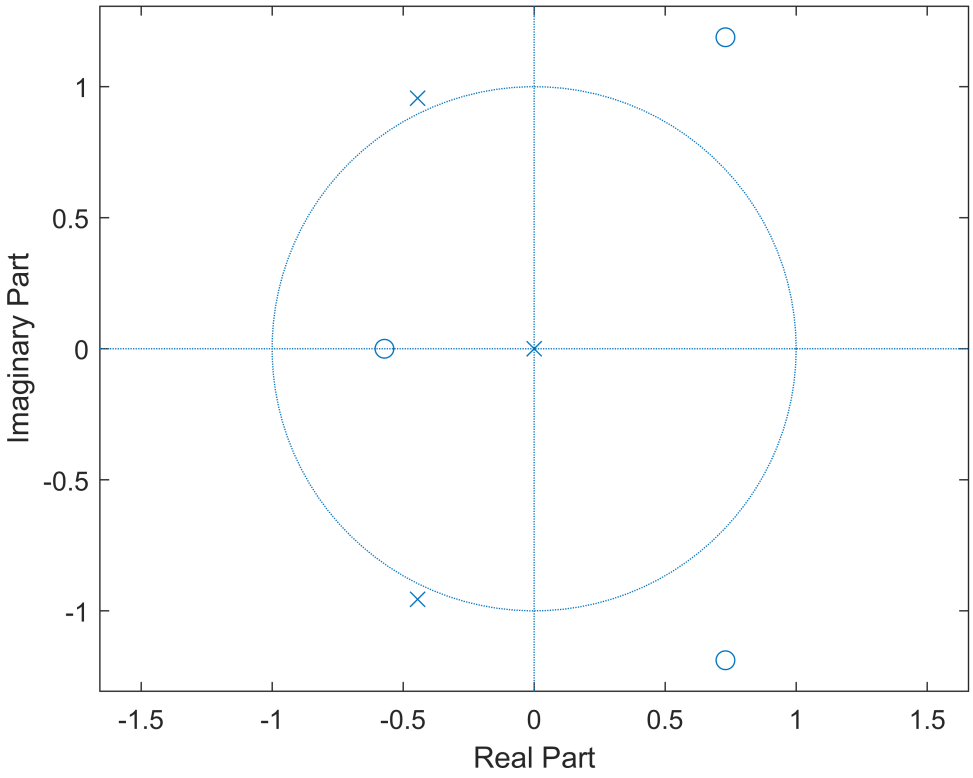
Zadanie 5

```
clear all

b = [0.9 -0.8 1 1];
a = [-0.9 -0.8 -1];
act_flag1 = isstable(b,a)
```

```
act_flag1 = logical
   0
```

```
zplane(b,a)
```



Wynik flag = 0 oznacza, że filtr jest niestabilny

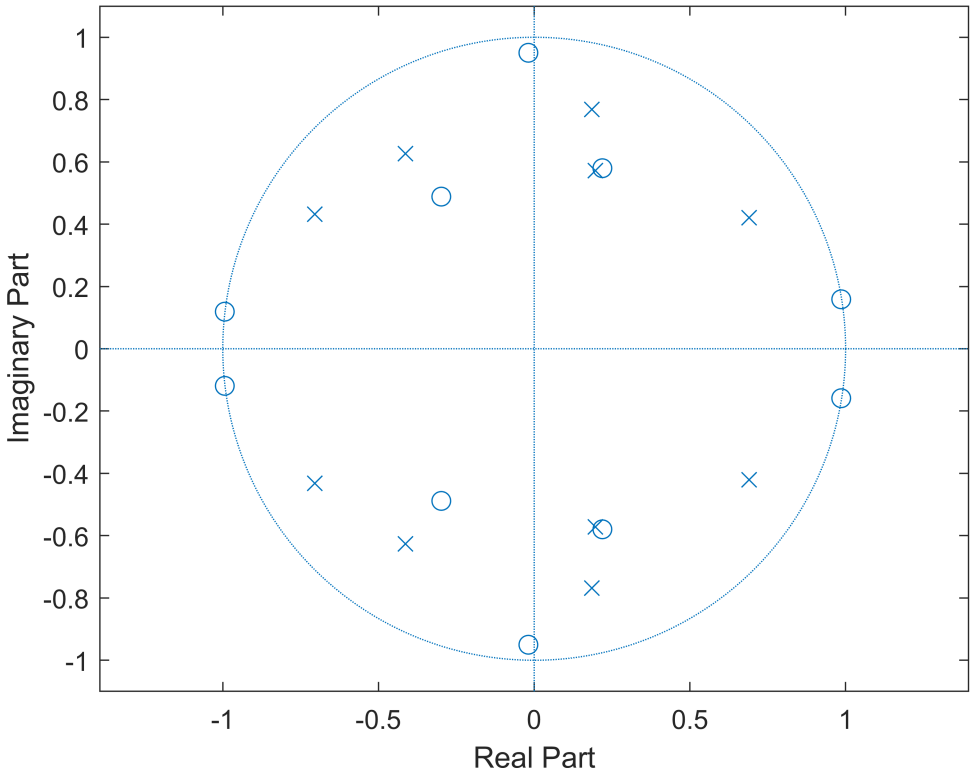
Zadanie 6

```
m = [0 0 1 1 1 0 1 1 0 0];
f = [0 0.1 0.2 0.3 0.4 0.5 0.7 0.8 0.9 1];
[b,a] = yulewalk(10,f,m);

act_flag1 = isstable(b,a)
```

```
act_flag1 = logical
   1
```

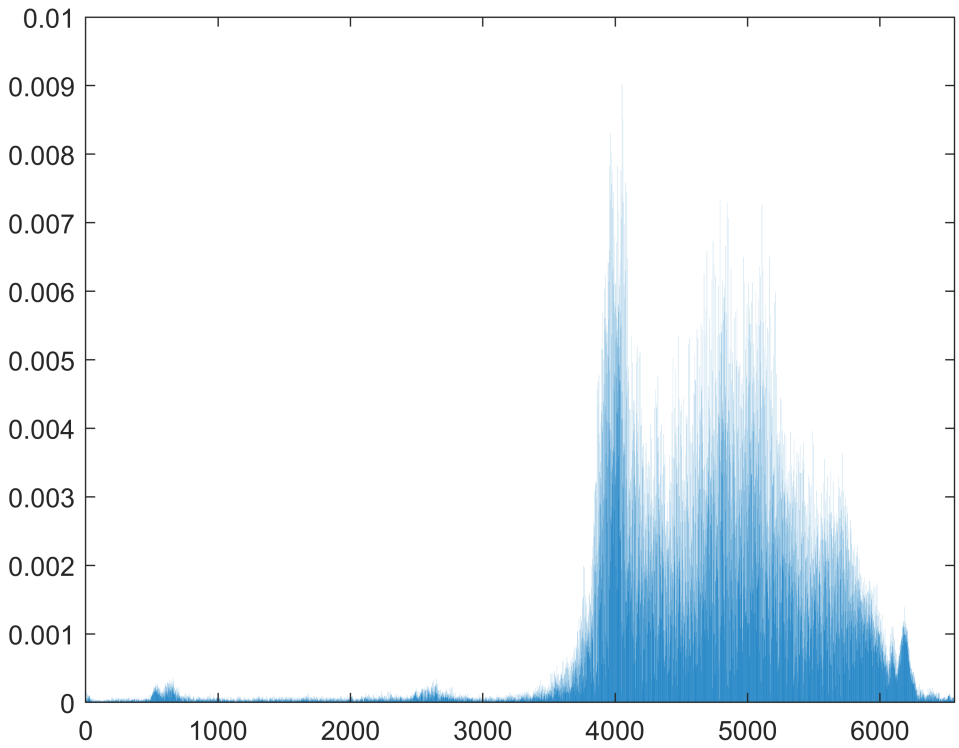
```
zplane(b,a)
```



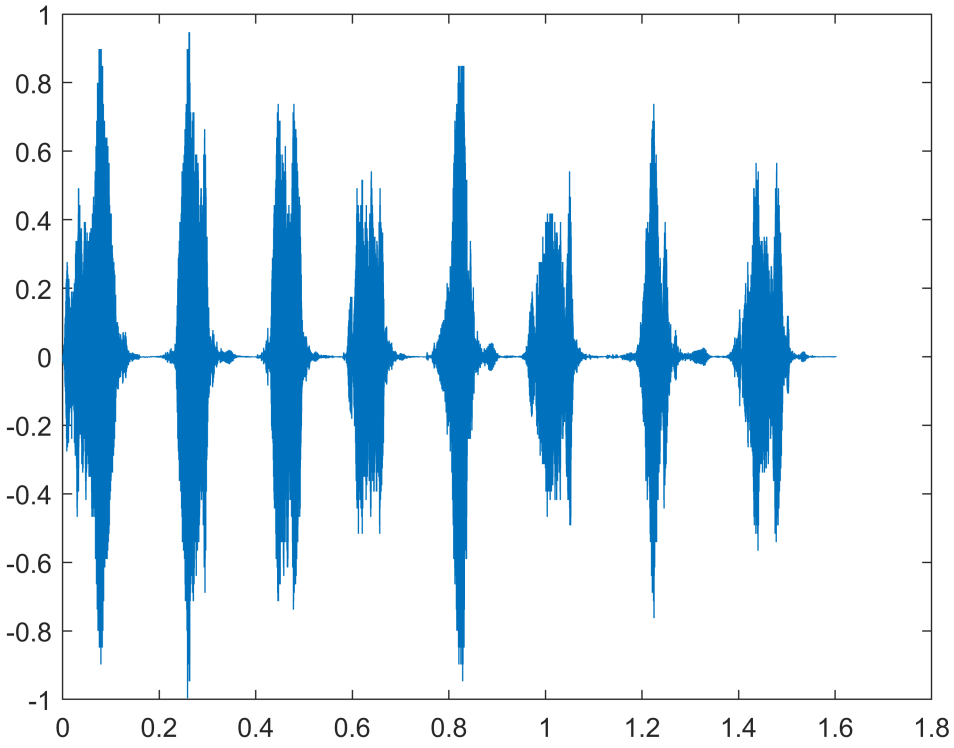
Wynik flag = 1 oznacza, że filtr jest stabilny

Zadanie 7

```
load chirp
t = (0:length(y)-1)/Fs; % 1.6 sekundy
xfft=abs(fft(y));
xfft=xfft/13129;
x1=1:1:6564;
bar(x1(1:6564), xfft(1:6564));
axis([0,6564, 0,0.01]) ;
```

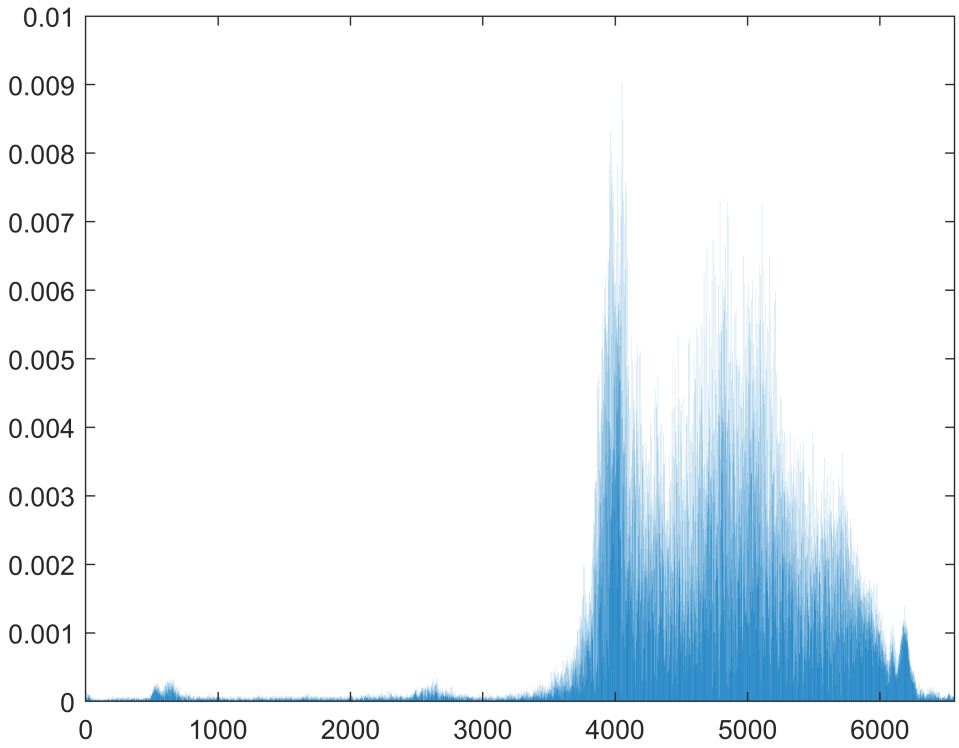

0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
0
1000
2000
3000
4000
5000
6000

```
plot(t,y);
```

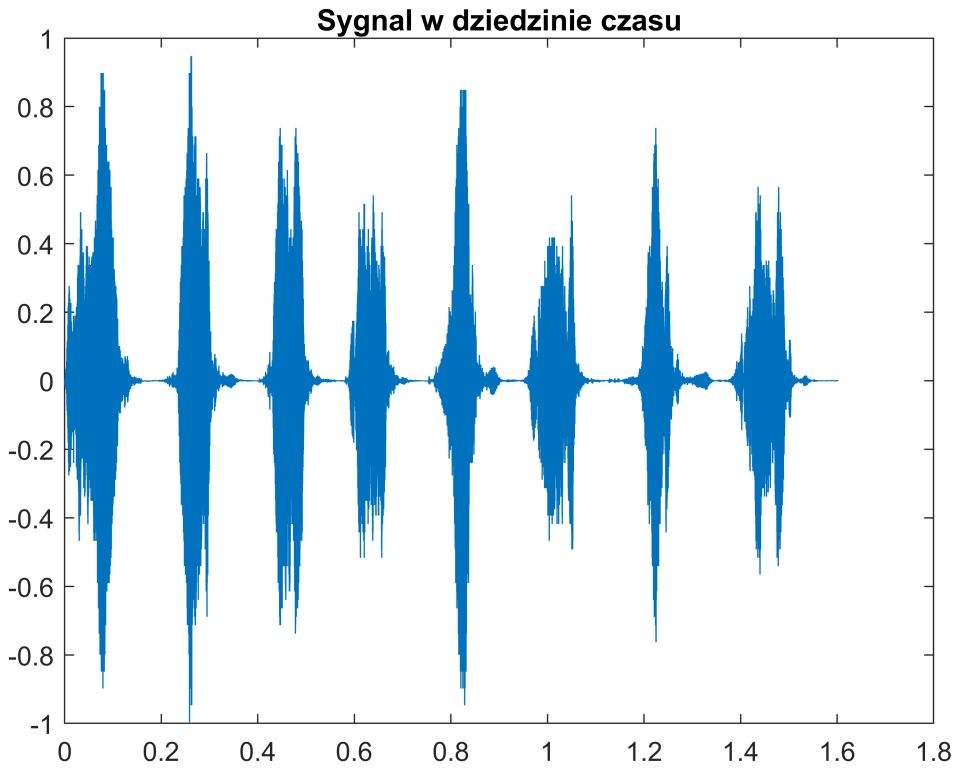

1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8

Zadanie 8

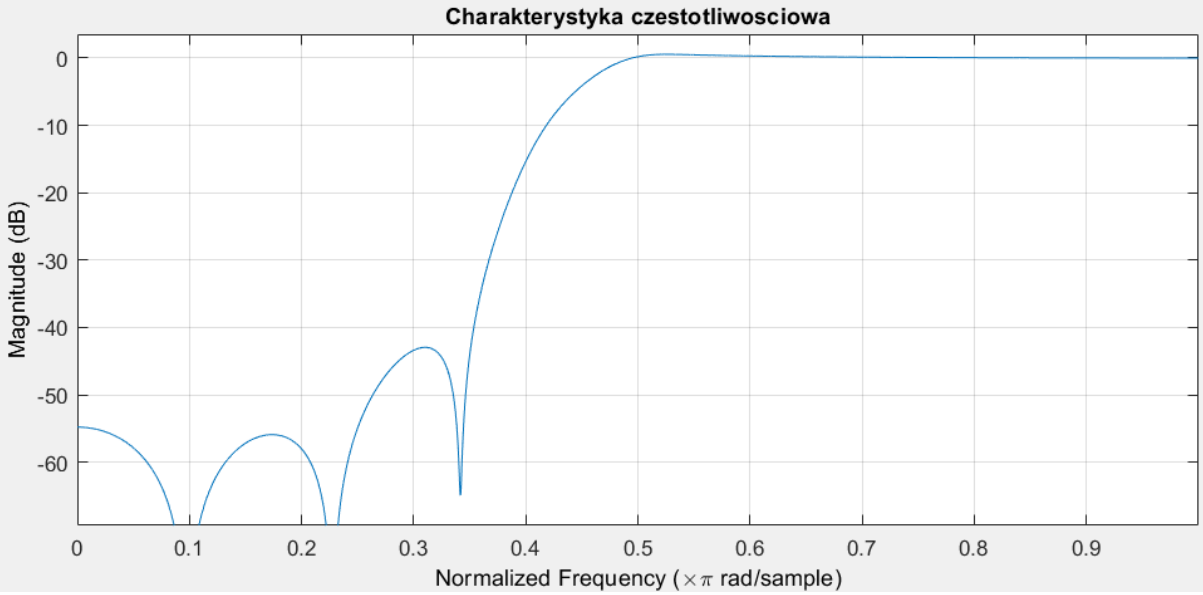
```
figure;
load chirp
t = (0:length(y)-1)/Fs; % 1.6 sekundy
xfft=abs(fft(y));
xfft=xfft/13129;
x1=1:1:6564;
bar(x1(1:6564), xfft(1:6564))
axis([0,6564, 0,0.01]);
```




```
plot(t,y);
title('Sygnal w dziedzinie czasu');
```

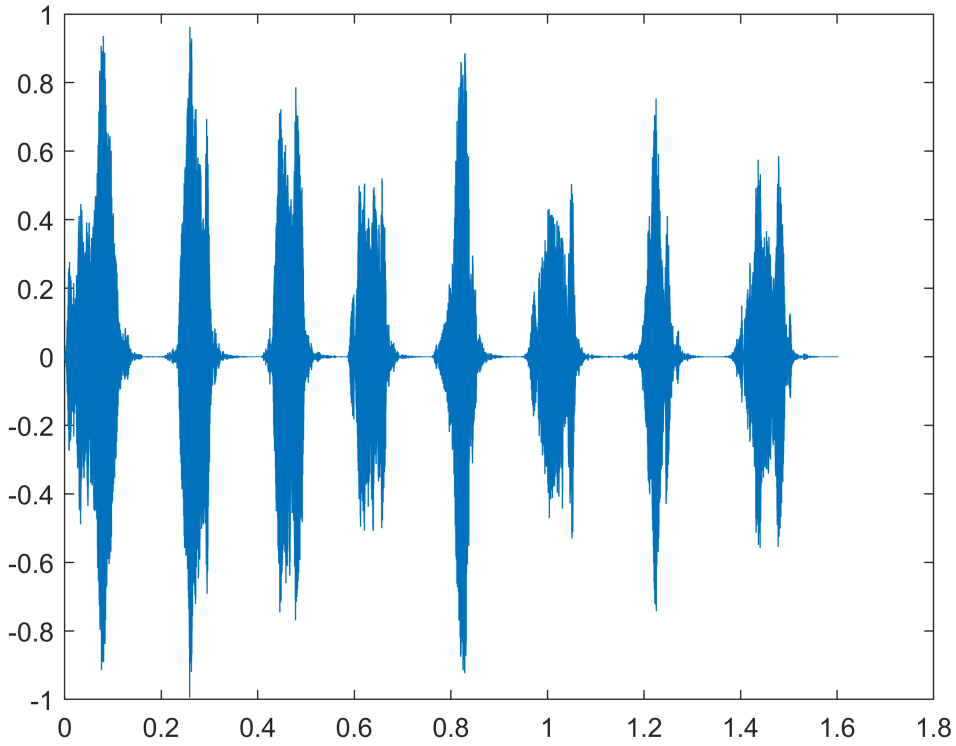



```
m = [0   0   0   0   0   1   1   1   1 1];
f = [0 0.1 0.2 0.3 0.4 0.5 0.7 0.8 0.9 1];
[b,a] = yulewalk(10,f,m);
fvtool(b,a)
title('Charakterystyka czestotliwosciowa');
```

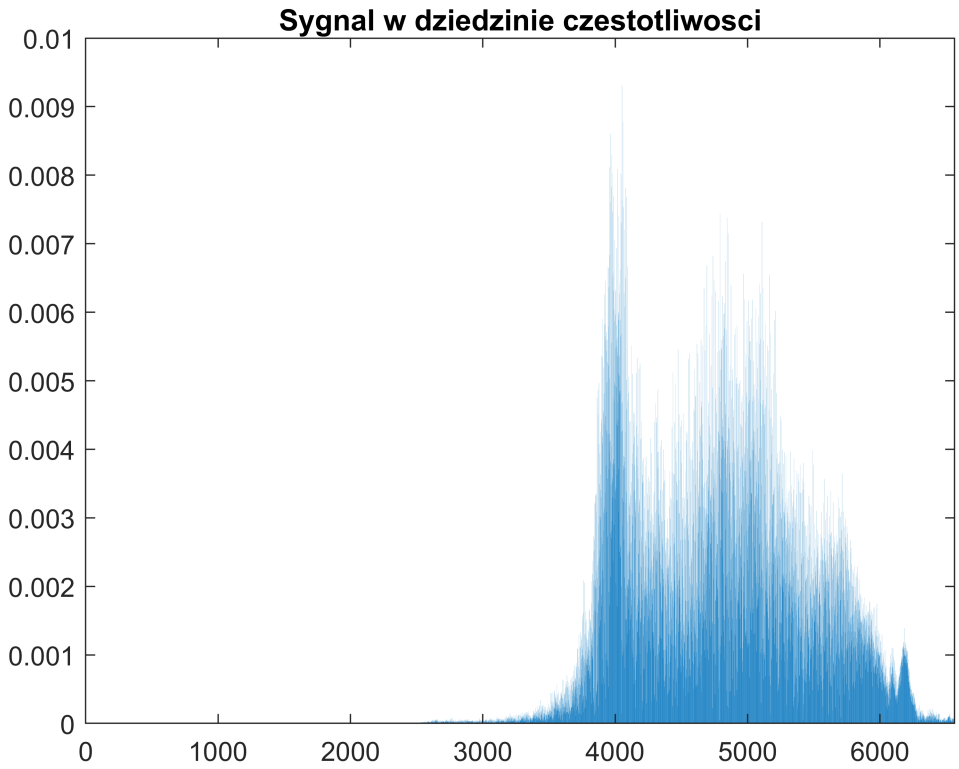



```
out = filter(b,a,y);
```

```
plot(t, out);
```




```
xfft=abs(fft(out));
xfft=xfft/13129;
x1=1:1:6564;
bar(x1(1:6564), xfft(1:6564));
axis([0,6564, 0,0.01]) ;
title('Sygnal w dziedzinie czestotliwosci');
```


Sygnal w dziedzinie czestotliwosci
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
0
1000
2000
3000
4000
5000
6000

Zadanie 9