Contents

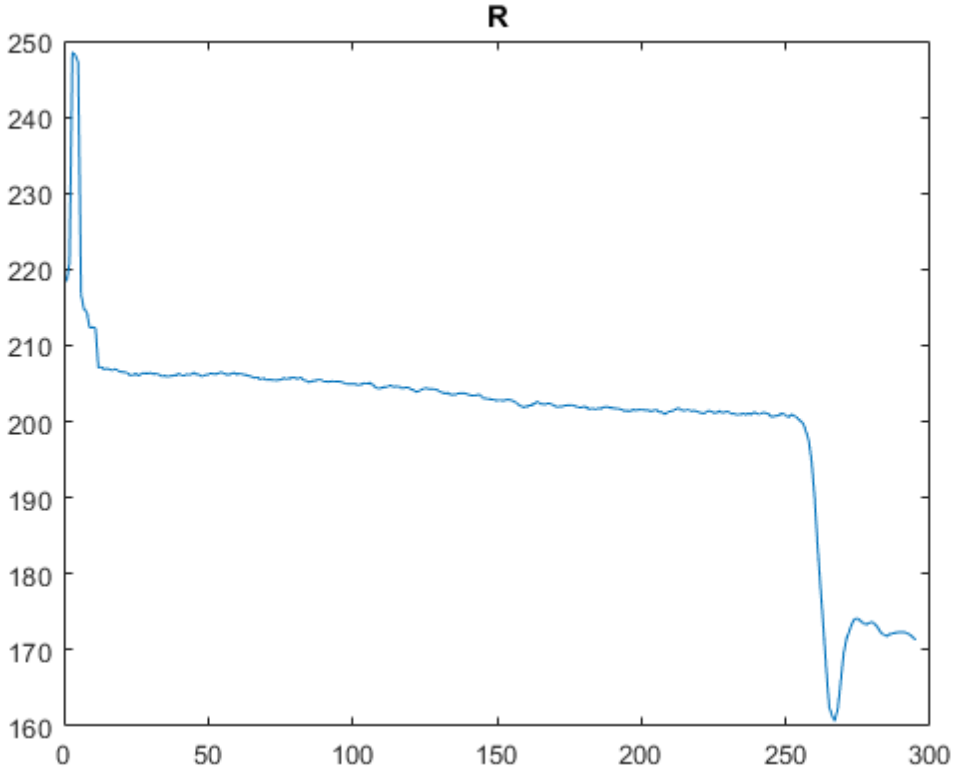
Preparation

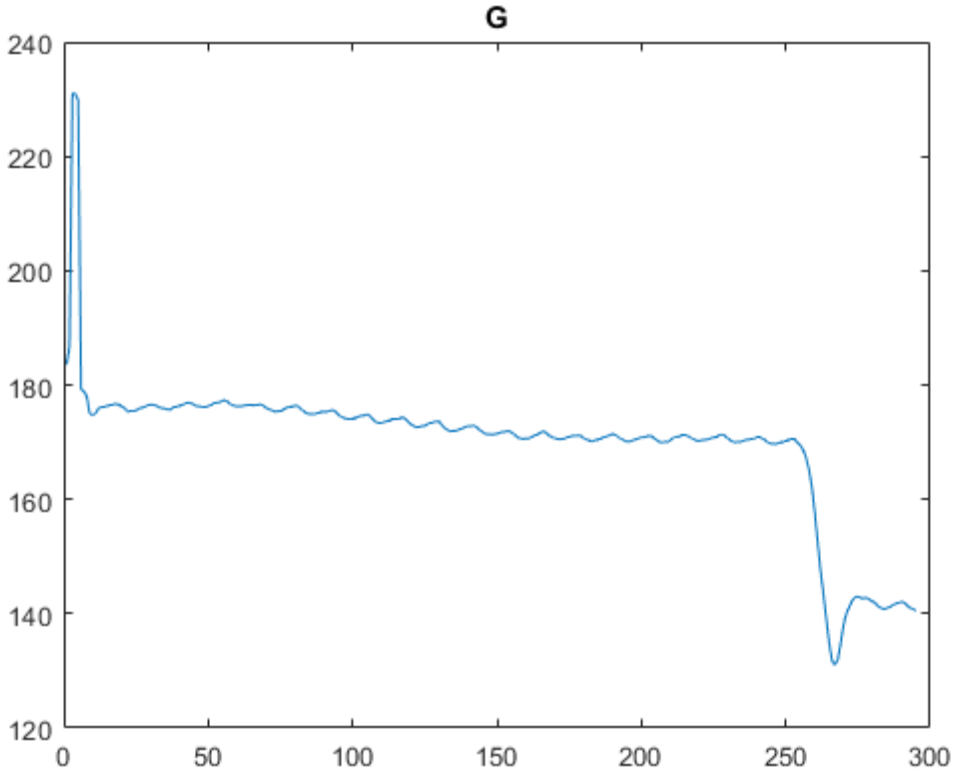
```
close all;
```

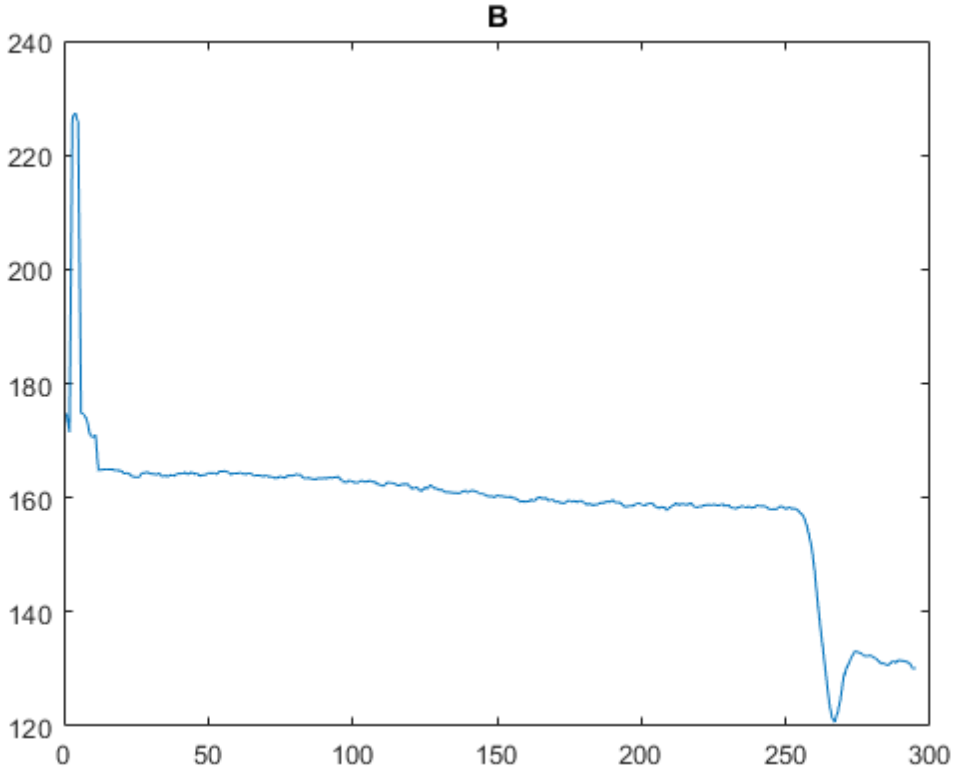
a)

```
daneP = importfile('daneP.csv', 4, 298);

% first way
plot(daneP{:,1});
title('R');
% second way
col2 = daneP{:, 2};
col3 = daneP{:, 3};
figure(2);
plot(col2);
title('G');
figure(3);
plot(col3);
title('B');
```

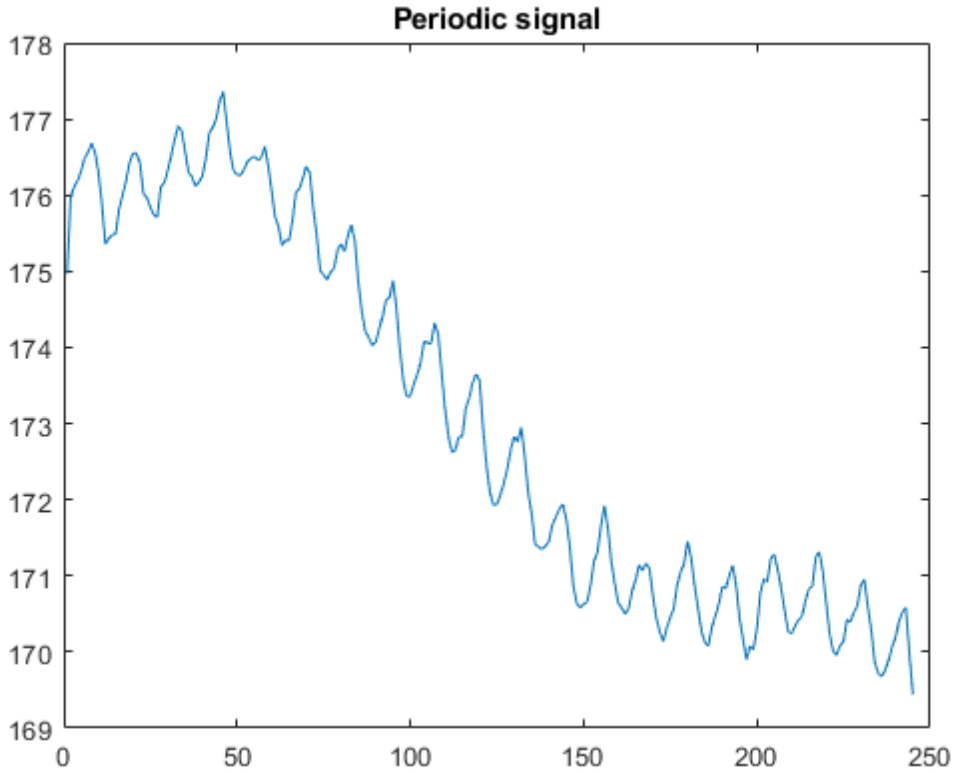

R
250
240
230
220
210
200
190
180
170
160
0
50
100
150
200
250
300


G
240
220
200
180
160
140
120
0
50
100
150
200
250
300



b)

```
periodicSignal = col2(11:255, :);
figure(4);
plot(periodicSignal);
title('Periodic signal');
```

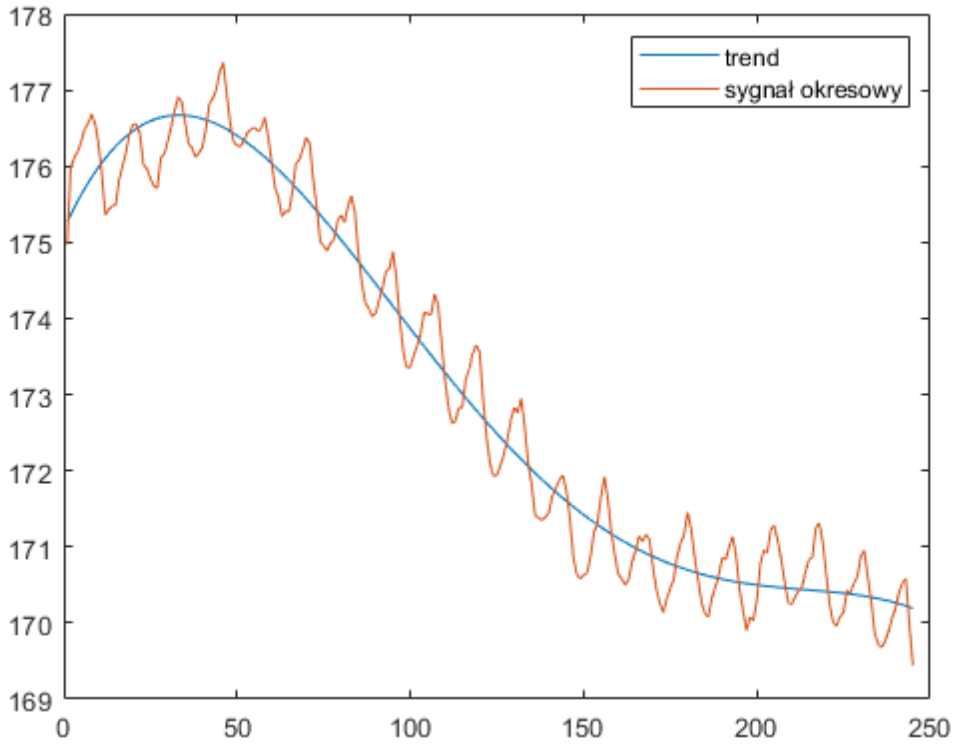


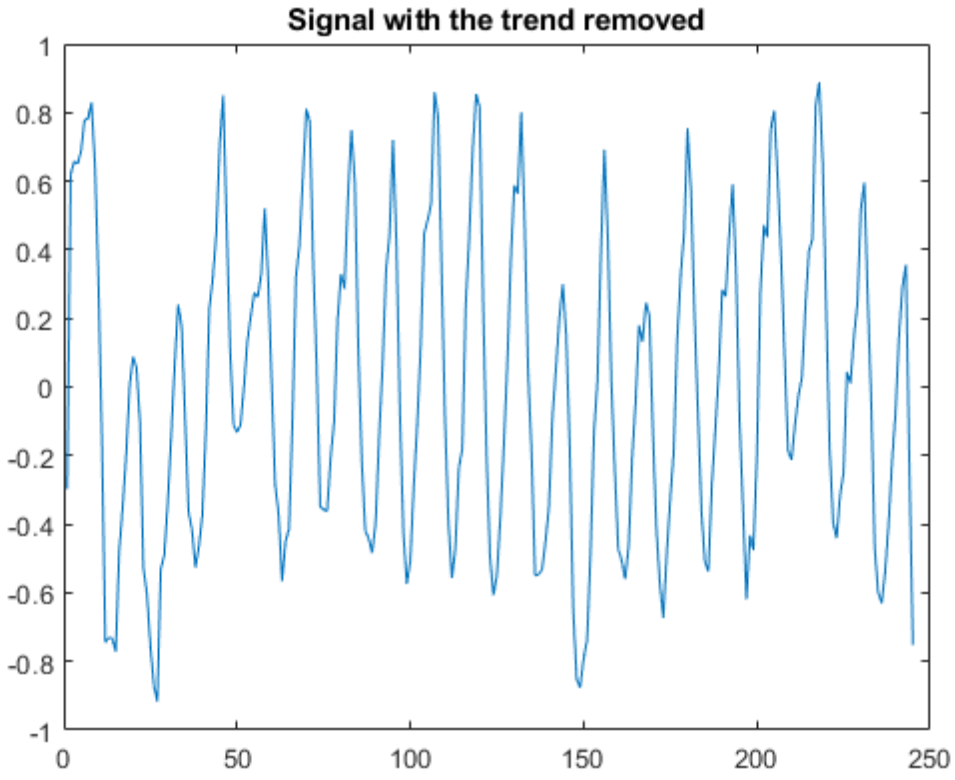
c)

```
x = 1:245;
y = polyval(fit.coeff, x);

figure(5);
plot(y);
hold on;
plot(periodicSignal);
hold off;
legend('trend', 'sygnał okresowy');

z = periodicSignal - transpose(y);
figure(6);
plot(z);
title('Signal with the trend removed');
```





d)

przekształcenie transformaty Fouriera sygnału po odjęciu trendu

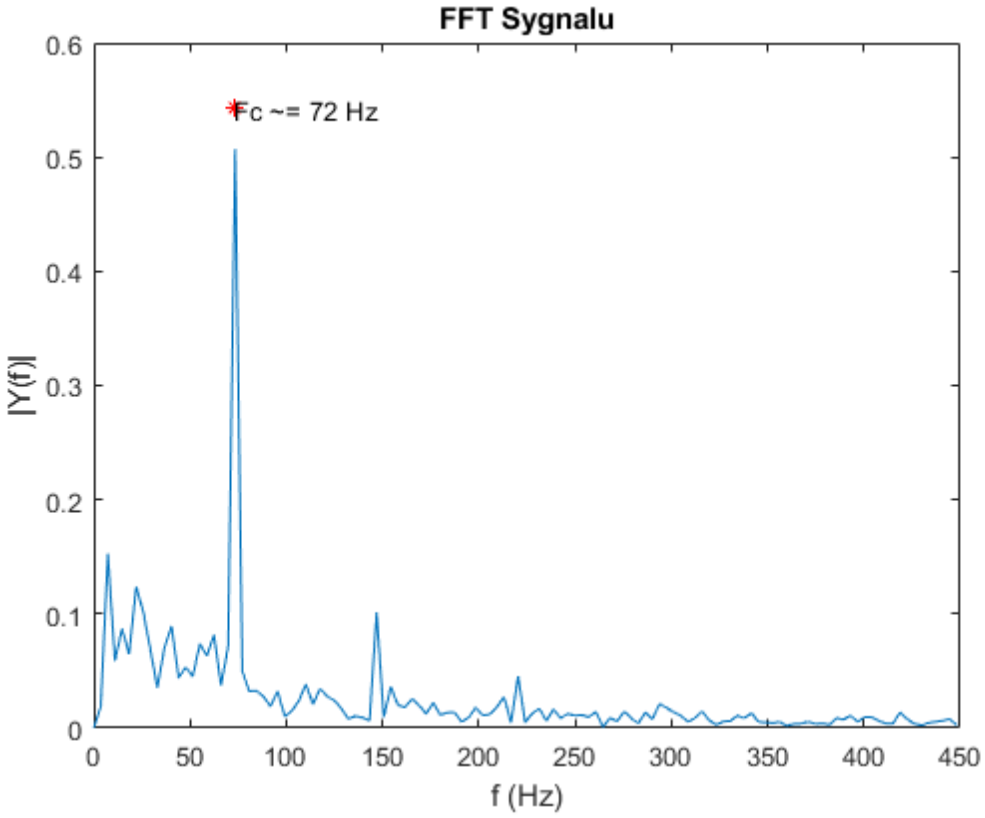
```
fftResids = fft(z);

% przekształcenie transformaty Fouriera na sposób dający się wyświetlić w
% postaci interpretowalej dla człowieka
L = length(fftResids);
```

```
P2 = abs(fftResids/L);
P1 = P2(1:(L/2)+1);
P1(2:end-1) = 2*P1(2:end-1);

% częstotliwość próbkowania wzięta z pliku dane.csv
Fs = 900;
f = Fs*(0:(L/2))/L;
% wykres
figure(7);
plot(f, P1);
hold on
plot(72.83, 0.543, "r*");
text(72.83, 0.543, "Fc ~= 72 Hz");
title('FFT Sygnalu');
xlabel('f (Hz)');
ylabel('|Y(f)|');
```

```
Warning: Integer operands are required for colon operator when used as index.
```



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