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Zadanie 1

```
A=[5, 6, 7, 8, 9];
B=[10, 8, 6, 8, 10];
C=[5, 6, 5, 6, 5];

lpc_A1 = lpc(A,1)
lpc_B1 = lpc(B,1)
lpc_C1 = lpc(C,1)

lpc_A2 = lpc(A,2)
lpc_B2 = lpc(B,2)
lpc_C2 = lpc(C,2)

lpc_A3 = lpc(A,3)
lpc_B3 = lpc(B,3)
lpc_C3 = lpc(C,3)
```

```
lpc_A1 =

    1.0000   -0.7843
```

```
lpc_B1 =

    1.0000   -0.7033
```

```
lpc_C1 =

    1.0000   -0.8163
```

```
lpc_A2 =

    1.0000   -0.8711    0.1107
```

```
lpc_B2 =
```

```
    1.0000   -0.6882   -0.0215


lpc_C2 =

    1.0000   -1.0154    0.2439


lpc_A3 =

    1.0000   -0.8585    0.0114    0.1140


lpc_B3 =

    1.0000   -0.6849    0.0828   -0.1516


lpc_C3 =

    1.0000   -1.0257    0.2866   -0.0420
```

Zadanie 2

```
F=[20, 30, 25, 15];
G=[1, 1, 1, 2, 2];

lpc_F1 = lpc(F,1)
lpc_G1 = lpc(G,1)

lpc_F2 = lpc(F,2)
lpc_G2 = lpc(G,2)

lpc_F3 = lpc(F,3)
lpc_G3 = lpc(G,3)


lpc_F1 =

    1.0000   -0.8023


lpc_G1 =

    1.0000   -0.7273


lpc_F2 =

    1.0000   -1.2569    0.5666
```

```
lpc_G2 =

    1.0000   -0.8421    0.1579


lpc_F3 =

    1.0000   -1.3477    0.7680   -0.1602


lpc_G3 =

    1.0000   -0.8750    0.3333   -0.2083
```

Zadanie 3

```
lpc1_wiatrak_20 = lpc(w20data, 1)
lpc1_przekladnia_20 = lpc(p20data, 1)

lpc2_wiatrak_20 = lpc(w20data, 2)
lpc2_przekladnia_20 = lpc(p20data, 2)

lpc10_wiatrak_20 = lpc(w20data, 10)
lpc10_przekladnia_20 = lpc(p20data, 10)


lpc1_wiatrak_20 =

    1.0000   -0.9038


lpc1_przekladnia_20 =

    1.0000   -0.8281


lpc2_wiatrak_20 =

    1.0000   -1.6060    0.7769


lpc2_przekladnia_20 =

    1.0000   -1.4440    0.7439


lpc10_wiatrak_20 =

  Columns 1 through 7

    1.0000   -1.8066    1.1386   -0.1747   -0.0319    0.0516   -0.1182
```

```
  Columns 8 through 11

   -0.0112    0.1082   -0.0671    0.0249


lpc10_przekladnia_20 =

  Columns 1 through 7

    1.0000   -1.6450    1.1575   -0.3574    0.0785    0.0313   -0.0931

  Columns 8 through 11

    0.0458   -0.0509    0.0864   -0.0027
```

Zadanie 4

```
samochod1=[1, 50, 1, 50, 1, 50, 1];
samochod2=[2, 49, 2, 49, 2, 49, 2];
samochod3=[1, 48, 2, 49, 3, 50, 4];

ciezarowka1=[10, 20, 10, 20, 10, 20];
ciezarowka2=[11, 21, 11, 21, 11, 21];
ciezarowka3=[12, 22, 12, 22, 12, 22];

lpc_samochod_1 = lpc(samochod1, 2)
lpc_samochod_2 = lpc(samochod2, 2)
lpc_samochod_3 = lpc(samochod3, 2)

lpc_ciezarowka1 = lpc(ciezarowka1, 2)
lpc_ciezarowka2 = lpc(ciezarowka2, 2)
lpc_ciezarowka3 = lpc(ciezarowka3, 2)


lpc_samochod_1 =

    1.0000   -0.0133   -0.6662


lpc_samochod_2 =

    1.0000   -0.0273   -0.6646


lpc_samochod_3 =

    1.0000   -0.0344   -0.6630


lpc_ciezarowka1 =
```

```
    1.0000   -0.4000   -0.4000


lpc_ciezarowka2 =

    1.0000   -0.4303   -0.3719


lpc_ciezarowka3 =

    1.0000   -0.4587   -0.3453
```

Zadanie 5

```
Ds1 = sum(abs(lpc_samochod_3 - lpc_samochod_1))
Ds2 = sum(abs(lpc_samochod_3 - lpc_samochod_2))

Dc1 = sum(abs(lpc_ciezarowka3 - lpc_ciezarowka1))
Dc2 = sum(abs(lpc_ciezarowka3 - lpc_ciezarowka2))


Ds1 =

    0.0243


Ds2 =

    0.0088


Dc1 =

    0.1135


Dc2 =

    0.0551
```

Zadanie 6

```
w0 = abs(lpc(w20data, 10));
w1 = abs(lpc(w21data, 10));
w3 = abs(lpc(w23data, 10));
w4 = abs(lpc(w24data, 10));

p0 = abs(lpc(p20data, 10));
p1 = abs(lpc(p21data, 10));
p3 = abs(lpc(p23data, 10));
p4 = abs(lpc(p24data, 10));
```

```
D_w0_w1 = sum(abs(w0 - w1))
D_w0_w3 = sum(abs(w0 - w3))
D_w0_w4 = sum(abs(w0 - w4))
D_w1_w3 = sum(abs(w1 - w3))
D_w1_w4 = sum(abs(w1 - w4))
D_w3_w4 = sum(abs(w3 - w4))


D_p0_p1 = sum(abs(p0 - p1))
D_p0_p3 = sum(abs(p0 - p3))
D_p0_p4 = sum(abs(p0 - p4))
D_p1_p3 = sum(abs(p1 - p3))
D_p1_p4 = sum(abs(p1 - p4))
D_p3_p4 = sum(abs(p3 - p4))
```

```
D_w0_w1 =

    0.1220


D_w0_w3 =

    0.0992


D_w0_w4 =

    0.1021


D_w1_w3 =

    0.0810


D_w1_w4 =

    0.0492


D_w3_w4 =

    0.1095


D_p0_p1 =

    0.1090


D_p0_p3 =
```

```
    0.5738


D_p0_p4 =

    0.2045


D_p1_p3 =

    0.5710


D_p1_p4 =

    0.1060


D_p3_p4 =

    0.6014
```

Zadanie 7

```
samochod1=[1, 50, 1, 50, 1, 50, 1];
samochod2=[2, 49, 2, 49, 2, 49, 2];
samochod3=[1, 48, 2, 49, 3, 50, 4];

ciezarowka1=[10, 20, 10, 20, 10, 20];
ciezarowka2=[11, 21, 11, 21, 11, 21];
ciezarowka3=[12, 22, 12, 22, 12, 22];

poly2lsf_samochod_1 = poly2lsf(lpc(samochod1, 2))
poly2lsf_samochod_2 = poly2lsf(lpc(samochod2, 2))
poly2lsf_samochod_3 = poly2lsf(lpc(samochod3, 2))

poly2lsf_ciezarowka1 = poly2lsf(lpc(ciezarowka1, 2))
poly2lsf_ciezarowka2 = poly2lsf(lpc(ciezarowka2, 2))
poly2lsf_ciezarowka3 = poly2lsf(lpc(ciezarowka3, 2))


poly2lsf_samochod_1 =

    0.5740
    2.5435


poly2lsf_samochod_2 =

    0.5624
    2.5299
```

```
poly2lsf_samochod_3 =

    0.5573
    2.5223


poly2lsf_ciezarowka1 =

    0.4510
    2.0944


poly2lsf_ciezarowka2 =

    0.4485
    2.0610


poly2lsf_ciezarowka3 =

    0.4464
    2.0300
```

Zadanie 8

```
D_s3_s1 = sum(abs(poly2lsf_samochod_3 - poly2lsf_samochod_1))
D_s3_s2 = sum(abs(poly2lsf_samochod_3 - poly2lsf_samochod_2))

D_c3_c1 = sum(abs(poly2lsf_ciezarowka3 - poly2lsf_ciezarowka1))
D_c3_c2 = sum(abs(poly2lsf_ciezarowka3 - poly2lsf_ciezarowka2))


D_s3_s1 =

    0.0379


D_s3_s2 =

    0.0127


D_c3_c1 =

    0.0690


D_c3_c2 =

    0.0331
```

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