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Delutani szekcio - multkori folytatasa

1. Elso pelda - halozati egyenletek megoldasa

```
clear all
clc
R = 2.4; % kOhm
U0 = 10; % V
alfa = 0.78; % erositas
A = [3 -1 0 -2*R*alfa;-1 5 -2 2*R*alfa;0 -1 4 0;0 -1 1 -R]
B = [0;0;U0;0]
x = A \ B
% helyettesito generator parametereinek szamitasa
% szakadasi feszultseg - UT
A2 = [3 -1 0 -2*R*alfa;-1 5 -2 2*R*alfa;0 -1 2 0;0 -1 1 -R]
x2 = A2\B

% rovidzarasi aram - IN
A3 = [3 -1 0 -2*R*alfa;-1 5 0 2*R*alfa;0 0 R R;0 1 0 R]
det(A)
B = [0;0;U0;0]
x3 = A3 \ B
% belso ellenallas szamitasa
RB = 5.7627/4.1667
% maximalis teljesitmeny, ha Rt=RB
5.7627^2/(4*1.383)

% tetszoleges lezaras eseten a halozat megoldasa
% csak az az egyenlet(ek) valtozik, amely(ek) az Rt-hez kapcsolodo
% csomopont(ok)ra vonatkoznak
Rt=2;
A = [3 -1 0 -2*R*alfa;-1 5 -2 2*R*alfa;0 -1/R 2/R+1/Rt 0;0 -1 1 -R];
x = A\B

A =
    3.0000    -1.0000         0    -3.7440
   -1.0000     5.0000    -2.0000     3.7440
         0    -1.0000     4.0000         0
         0    -1.0000     1.0000    -2.4000

B =
     0
     0
    10
```

```

0
x =
  1.2598
  0.7087
  2.6772
  0.8202
A2 =
  3.0000  -1.0000  0  -3.7440
 -1.0000  5.0000 -2.0000  3.7440
  0  -1.0000  2.0000  0
  0  -1.0000  1.0000 -2.4000
x2 =
  2.7119
  1.5254
  5.7627
  1.7655
A3 =
  3.0000  -1.0000  0  -3.7440
 -1.0000  5.0000  0  3.7440
  0  0  2.4000  2.4000
  0  1.0000  0  2.4000
ans =
 -97.5360
B =
  0
  0
  10
  0
x3 =
  0
  0
  4.1667
  0
RB =
  1.3830
ans =
  6.0030
x =
  3.8477
  2.1643
  8.1764
  2.5050

```

2. Ketkapu (lezart) megoldasa

```

RR = [2 7;5 8];
primer oldal UT=10 V, Rg=2 kOhm;
szekunder oldal Rt=10 kOhm
valtozok : u1,i1,u2,i2

```

```

format compact
A = [1 -2 0 0 ;0 0 1 -10;1 -2 0 -7;0 -5 1 -8]

```

```
B=[10;0;0;0]
x=A\B
```

```
A =
     1     -2     0     0
     0     0     1    -10
     1     -2     0     -7
     0     -5     1     -8
```

```
B =
    10
     0
     0
     0
```

```
x =
    11.1429
     0.5714
    14.2857
     1.4286
```

2/b. reciprocitas vizsgalata

primer oldal $U_0=10$ mA, szekunder $U_2 = 0$ (rz)

```
A = [1 0 0 0 ;0 0 1 0;1 -2 0 -7;0 -5 1 -8]
B =[10;0;0;0];
x1 = A \ B
% megfordított eset
% primer : rz (U=0), szekunder : gerj. (U=10)
A = [1 0 0 0 ;0 0 1 0;1 -2 0 -7;0 -5 1 -8];
B=[0;10;0;0];
x2 = A\B
% reciprok, ha x1(4) == x2(2)
```

```
A =
     1     0     0     0
     0     0     1     0
     1    -2     0    -7
     0    -5     1    -8
```

```
x1 =
    10.0000
    -4.2105
         0
     2.6316
```

```
x2 =
         0
     3.6842
    10.0000
    -1.0526
```

2/c. Reciprok ketkapu (R12=R21)

```
A = [1 0 0 0 ;0 0 1 0;1 -2 0 -5;0 -5 1 -8]
x2 = A\B
```

```
B=[10;0;0;0]
x1 = A \ B
```

```
A =
    1     0     0     0
    0     0     1     0
    1    -2     0    -5
    0    -5     1    -8
```

```
x2 =
     0
  5.5556
 10.0000
 -2.2222
```

```
B =
    10
     0
     0
     0
```

```
x1 =
 10.0000
 -8.8889
     0
  5.5556
```

2/d. Szimmetrikus ketkapu (R12=R21 ES R11=R22)

```
A = [1 0 0 0 ; 0 0 1 0; 1 -8 0 -5; 0 -5 1 -8]
```

```
x1 = A \ B
```

```
B=[0;10;0;0]
```

```
x2 = A\B
```

```
A =
    1     0     0     0
    0     0     1     0
    1    -8     0    -5
    0    -5     1    -8
```

```
x1 =
 10.0000
  2.0513
     0
 -1.2821
```

```
B =
     0
    10
     0
     0
```

```
x2 =
     0
 -1.2821
 10.0000
  2.0513
```

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