

```
%ese trafo
An=200e3;
V1n=10e3;
V2n=400;
cosficc=0.35;
pcc=2/100;
io=1/100;
po=0.5/100;
Pu=75e3;
Vu=310;
cosfiu=0.9;
```

```
%svolgimento
%calcolo parametri
Pcc=pcc*An
I2n=An/V2n
Rcc=Pcc/I2n^2
Xcc=(Pcc*tan(acos(cosficc)))/I2n^2
Po=po*An
I1n=An/V1n
Io=io*I1n
cosfio=Po/(V1n*Io)
Ro=V1n^2/Po
Xo=V1n^2/(Po*tan(acos(cosfio)))
```

```
Pcc =
      4000
```

```
I2n =
      500
```

```
Rcc =
      0.0160
```

```
Xcc =
      0.0428
```

```
Po =
     1000
```

```
I1n =
      20
```

```
Io =
```

```

%Ese2
%Dati
E1=15*exp(-j*pi/4);
E3=E1;
E2=12*exp(j*pi/3);
I1=4*exp(j*pi/3);
R1=25;
R4=R1;
R2=10;
R3=R2;
Xl=15;
Xc=15;

```

```

%svolgimento
Vmill=((E1/R1)-E2/(R3+j*Xl)+I1)/((1/R1+1/(R3+j*Xl)))
Ir=(Vmill-E1)/R1
abs(Ir)
angle(Ir)

```

Vmill =

-1.9288 +41.0909i

Ir =

-0.5014 + 2.0679i

ans =

2.1278

ans =

1.8087

```
%Trasitorio
```

```
%Dati
```

```
E1=15;  
E2=20;  
R1=5;  
R2=10;  
R3=2;  
R4=12;  
A=5;  
L=20e-3;
```

```
%t zero meno
```

```
Vmilzm=(A+E2/(R2+R3))/(1/(R2+R3)+1/R4)  
irzm=-Vmilzm/R4  
ilzm=(Vmilzm-E2)/(R2+R3)
```

```
Vmilzm =  
  
40.0000
```

```
irzm =  
  
-3.3333
```

```
ilzm =  
  
1.6667
```

```
%zero piu
```

```
Vvzp=E1-R1*ilzm  
Reqzp=R1+R3  
Vmilzp=(A+Vvzp/Reqzp)/(1/Reqzp+1/R4)  
irzp=-Vmilzp/R4
```

```
Vvzp =  
  
6.6667
```

```
Reqzp =  
  
7
```

```
Vmilzp =  
  
26.3158
```

```
irzp =
```

-2.1930

```
%t infinito
```

```
Reqinf=R3+R1*R2/(R1+R2)
```

```
Vvinf=(E2-E1)/(R1+R2)*R1+E1
```

```
Vmilinf=(A+Vvinf/(Reqinf))/(1/Reqinf+1/R4)
```

```
irinf=-Vmilinf/R4
```

```
Reqinf =
```

```
5.3333
```

```
Vvinf =
```

```
16.6667
```

```
Vmilinf =
```

```
30.0000
```

```
irinf =
```

```
-2.5000
```

```
%tau
```

```
Req=(R3+R4)*R1/(R3+R4+R1)+R2
```

```
tau=L/Req
```

```
Req =
```

```
13.6842
```

```
tau =
```

```
0.0015
```

0.2000

cosfiu =

0.5000

Ro =

100000

Xo =

5.7735e+04

%Risolvo con Boucherot

$I_u = P_u / (V_u \cdot \cos \phi_u)$

$Q_u = P_u \cdot \tan(\arccos(\cos \phi_u))$

$P_a = P_u + R_{cc} \cdot I_u^2$

$Q_a = Q_u + X_{cc} \cdot I_u^2$

$I_a = I_u$

$V_a = \sqrt{P_a^2 + Q_a^2} / I_a$

$k = V_{1n} / V_{2n}$

$V_{ap} = V_a \cdot k$

$P_b = P_a + V_{ap}^2 / R_o$

$Q_b = Q_a + V_{ap}^2 / X_o$

$V_b = V_{ap}$

$I_b = \sqrt{P_b^2 + Q_b^2} / V_b$

$\cos \phi_{ib} = P_b / (V_b \cdot I_b)$

Iu =

268.8172

Qu =

3.6324e+04

Pa =

7.6156e+04

Qa =

3.9419e+04

Ia =

268.8172

Va =

319.0016

k =

25

Vap =

7.9750e+03

Pb =

7.6792e+04

Qb =

4.0520e+04

Vb =

7.9750e+03

Ib =

10.8873

cosfib =

0.8844