```matlab
% Proracun vrelista T, x -> P, y
% heptan(1)-toluen(2)

clc
R=83.144; %barcm3/mol/K
x=[.6 .4];
nk=2;
T=374; %K
M=[100.13 92.06]; %g/mol
ro=[.73 .867]; %g/cm3
global A B C lambda12 lambda21
lambda12=0.73672;
lambda21=0.977953;
A=[6.9024 6.95334];
B=[1268.115 1343.943];
C=[216.9 219.377];

v=M./ro;
P=x*peq(T)';

%"provjera" prije proracuna
K=gama(x).*peq(T).*exp(v.*(P-peq(T))/R/T)/P;
y=K.*x;
fprintf('\nPocetne pretpostavke:\n');
fprintf('P=%g bar\n',P);
for i=1:nk
    fprintf('y(%g)=%g\n',i,y(i));
end

fprintf('\nProvjera:\n');
fprintf('suma(y(i))-1=%g\n',sum(y)-1);
for i=1:nk
    fprintf('y(%g)-K(%g)*x(%g)=%g\n',i,i,i,y(i)-K(i)*x(i));
end

%proracun
krit=33;
iter=0;
while krit>1e-4
    Pnovi=sum(gama(x).*x.*peq(T).*exp(v.*(P-peq(T))/R/T));
    krit=(Pnovi-P)/Pnovi;
    P=Pnovi;
    iter=iter+1;
end

K=gama(x).*peq(T).*exp(v.*(P-peq(T))/R/T)/P;
y=K.*x;
fprintf('\nRezultati:\n');
fprintf('broj iteracija=%g\n',iter);
fprintf('P=%g bar\n',P);
for i=1:nk
    fprintf('y(%g)=%g\n',i,y(i));
end

fprintf('\nProvjera:\n');
```

```matlab
56    fprintf('suma(y(i))-1=%g\n',sum(y)-1);
57    for i=1:nk
58        fprintf('y(%g)-K(%g)*x(%g)=%g\n',i,i,i,y(i)-K(i)*x(i));
59    end
60
61    %eksperimentalni podaci i odstupanje
62    Pexp=760*101325/760/1e5; %bar
63    y1exp=0.664;
64    fprintf('\nOdstupanje od eksp. podataka:\n');
65    fprintf('apsolutno:\n');
66    fprintf('P-Pexp=%g bar\n',P-Pexp);
67    fprintf('y(1)-y1exp=%g\n',y(1)-y1exp);
68    fprintf('relativno:\n');
69    fprintf('(P-Pexp)/Pexp=%g\n',(P-Pexp)/Pexp);
70    fprintf('(y(1)-y1exp)/y1exp=%g\n',(y(1)-y1exp)/y1exp);
```

```matlab
function f=peq(T)
global A B C
f=A-B./(C+T-273.15);
f=10.^f;
f=f*101325/760/100000; %bar
```

```matlab
function f=gama(x)
global lambda12 lambda21
lng1=-log(x(1)+lambda12*x(2))+x(2)*(lambda12/(x(1)+lambda12*x(2))-lambda21/(x(2)+lambda21*x(1)));
lng2=-log(x(2)+lambda21*x(1))-x(1)*(lambda12/(x(1)+lambda12*x(2))-lambda21/(x(2)+lambda21*x(1)));
f=exp([lng1 lng2]);
```