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%{
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Subject: Assignment2 Q7
%}

clear all % Clear stored variables
clc % Clear the screen
close all % Close all previously created plots

%Defining the values of Antoine's Constants for two compounds
A1 = -3848.09;
A2 = -4328.12;
B1 = 17.5318;
B2 = 17.913;

% Boiling points of coumpound Alpha and Beta
Tbalpha = (A1/(log(760)-B1))-273.15 %79.93 degree celcius
Tbbeta = (A2/(log(760)-B2))-273.15 % 110.56 degree celcius

%Range of x
x = 0:0.1:1

%Initiate T
T = ones(1,10)

% Calculation1 for P_bubble
for i = (1:11)
    p1 = @(T) (x(i).*(exp(A1./(T+273.15) + B1)))+(1-x(i)).*(exp(A2./
(T+273.15)+B2)))-760;
    T(i) = fzero(p1,60);
end

%Calculation2 for P_dew
for i = (1:11)
    p2 = @(y) ((y./(exp(A1./(T(i)+273.15)+B1))) + ((1-y)./exp((A2)./
(T(i)+273.15))+ B2)) - (1/760));
    y(i) = fzero(p2,0);

end

%Plotting the values of x (from 0 to 1) and y (found from the above
%calculation2) against the different values of T from calculation1
plot(x,T,'r',y,T,'b')
hold on;

% Incase x1 = x2
x1 = 0.5;
p1 = @(T) x1*(exp(A1/(T+273.15) + B1))+(1-x1).*(exp(A2/(T
+273.15)+B2)))-760;

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```
T1 = fzero(p1,0)
```

```
% For the value of y if x1 = x2
y1 = x1*(exp(A1./(T1+273.15)+B1))/760
plot(x1,T1,'o',y1,T1,'co')
grid on
legend('x','y')
```

```
Tbalpha =
```

```
79.9350
```

```
Tbbeta =
```

```
110.5594
```

```
x =
```

```
Columns 1 through 7
```

```
0    0.1000    0.2000    0.3000    0.4000    0.5000    0.6000
```

```
Columns 8 through 11
```

```
0.7000    0.8000    0.9000    1.0000
```

```
T =
```

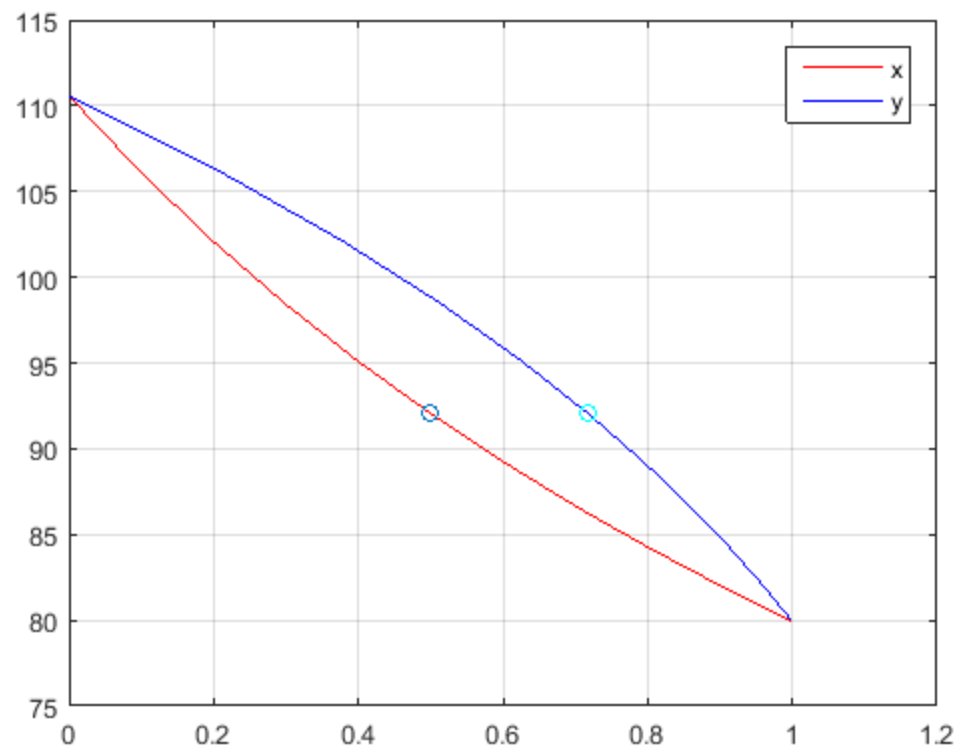
```
1    1    1    1    1    1    1    1    1    1
```

```
T1 =
```

```
92.0481
```

```
y1 =
```

```
0.7177
```



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