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clc
clear;
X_F=0.21;
n_F=100*(1000/3600);           %mol/s
P=101.325*1000*1 ;             %Pa

p=0.8*101.325*1000 ;           %Pa
r=P/p;
Am=1000000;                     %m2
syms Y_P                       %mol/m2*s
Q_O2=1.4384*(10^(-5));
%Q_O2=0.42*3.38*(10^(-10));    %mol/(m2*s*Pa)
%Q_O2=1.4384e-5;
Alfa=2.3;
%Q_N2=0.6253e-5;
Q_N2=Q_O2/Alfa;
Q_t=Q_O2+Q_N2;

n_P=(Q_t)*(Am);

n_R=n_F-n_P;

%X_R=((X_F*n_F)-(Y_P*n_P))/n_R; %X_R

%Y_i=((Alfa-1)*(r*((X_F*n_F)-(Y_P*n_P))/n_R)-
1)+r)/(2*(Alfa-1))-((sqrt(((Alfa-
1)*(r*((X_F*n_F)-(Y_P*n_P))/n_R)+1)+r)^2)-
(4*(Alfa-1)*Alfa*r*((X_F*n_F)-
(Y_P*n_P))/n_R)))/(2*(Alfa-1)); %Y_i

%Y_P=((X_F*P-Y_P*p)-(X_R*P-Y_i*p))/log((X_F*P-
Y_P*p)/(X_R*P-Y_i*p));

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eq3=(Y_P*(log((X_F*P)-(Y_P*p)/((((X_F*n_F)-(
(Y_P*n_P))/n_R)*P)-((((Alfa-1)*(r*((X_F*n_F)-(
(Y_P*n_P))/n_R)-1)+r)/(2*(Alfa-1)))-((sqrt((((Alfa-
1)*(r*((X_F*n_F)-(Y_P*n_P))/n_R)+1)+r)^2)-
(4*(Alfa-1)*Alfa*r*((X_F*n_F)-(
(Y_P*n_P))/n_R))))/(2*(Alfa-1))))*p))))-(((X_F*P)-(
(Y_P*p))-((((X_F*n_F)-(Y_P*n_P))/n_R)*P)-
((((Alfa-1)*(r*((X_F*n_F)-(Y_P*n_P))/n_R)-
1)+r)/(2*(Alfa-1)))-((sqrt((((Alfa-
1)*(r*((X_F*n_F)-(Y_P*n_P))/n_R)+1)+r)^2)-
(4*(Alfa-1)*Alfa*r*((X_F*n_F)-(
(Y_P*n_P))/n_R))))/(2*(Alfa-1))))*p)); %y_P

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s=solve(eq3)

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