```c
float derive(float T,int n)
{
 float dtdx, Cpg=0.719;
 float U=500.0,s1=10.0,W=26400.0,Cpf=0.707,f=1.0,H=-26400.0,R=1.987,
 s2=1;
 double k1,k2,temp,t4;
 double t1,t2,t3;
 switch(n) {
  case 1:
     dtdx=((-U*s1)/(W*Cpf))*(Tg-T);
         break;
  case 2:
     k1=1.78954*pow(10,4)*exp(-20800/(R*Tg));
     k2=2.5714*pow(10,16)*exp(-47400/(R*Tg));
     temp=(k2/1.5)*(2/3)*((701.2-T)/T);
         dtdx=-(k1*1.5*286*(T/(1-2*(701.2-T)))*(T/(2*(701.2-T)))-temp);
     break;
  case 3:
       t4=((2*(701.2-T)*(1-2*(701.2-T)))-temp);
       t1=(U*s1)/(W*Cpg)*(T-Tf)+(-H*s2)/(W*Cpg)*f*((k1*1.5*286*T*T)/t4);
       break;
          }
 return(dtdx);
}


float RK(float y,float dydx,float h,int n)
{
  float hh,h6,dym,dyt,yout,yx,dyx;
  hh=h*0.5;
  h6=h/6.0 ;
  yx=y+hh*dydx;
  dyx=derive(yx,n);
  yx=y+hh*dydx; dym=derive(yx,n);
  yx=y+hh*dydx; dym+=dyx;
  dyx=derive(yx,n);
  yout=y+h6*(dydx+dyx+2.0*dym);
  return(yout);
}
```