```
function y=g(x, y)
    y=-1.2*y+7*exp(-0.3*x)
endfunction

function [x, y]=euler (a, b, y0, h)
    x=a:h:b
    n=length(x)
    y(1)=y0
    for i=1:n-1
        y(i+1)=y(i)+g(x(i),y(i))*h
    end
endfunction

heun
        k1=g(x(i),y(i))
        k2=g(x(i)+h,y(i)+k1*h)
        k=(k1+k2)/2
        y(i+1)=y(i)+k*h

ptm
        k1=g(x(i),y(i))
        k2=g(x(i)+h/2,y(i)+k1*h/2)
        k=k2
        y(i+1)=y(i)+k*h

rk4
        k1=g(x(i),y(i))
        k2=g(x(i)+h/2,y(i)+k1*h/2)
        k3=g(x(i)+h/2,y(i)+k2*h/2)
        k4=g(x(i)+h,y(i)+k3*h)
        k=(k1+2*k2+2*k3+k4)/6
        y(i+1)=y(i)+k*h

function [x, y]=iteracaoe(x, y, h, n)
    for i=1:n
        y=y+g(x,y)*h;
        x=x+h;
    end
endfunction

function [h]=passoeuler(x, y, h, er)
    [x,yatual]=iteracaoe(x,y,h,1)
    [x,ynovo]=iteracaoe(x,y,h/2,2)
//calculoerro
    erro=abs(yatual-ynovo);
    if (erro>er) then
        h=h*((abs(er/erro))^0.25);
    else
        h=h*((abs(er/erro))^0.2);
    end
endfunction

function [x, y]=euleradapt(a, b, h, y0, er)
    i=1;
    x(1)=a;
    y(1)=y0;
    while(%T)
        h=passoeuler(x(i),y(i),h,er)
        [x(i+1),y(i+1)]=iteracaoe(x(i),y(i),h,1)
        if (x(i+1)>b)
            break;
        end
        i=i+1;
    end
endfunction

[xd,y]=euleradapt(0,2.2,0.3,1.9,1E-3)
plot(xd,y,'+')
```