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,'+')