
Programa principal

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Comparativa de convergència

```
clear variables; clc;
```

EDO

```
f=@(t,y)-y+t+1; % y'=f(t,y)
a=0; alpha=1;    % y(a)=alpha
b=1;             % y(b)=...
g=@(t)exp(-t)+t;
```

Euler

```
h=0.25; t1=[a:h:b];
[ ye1 ] = Euler( f,a,b,h,alpha );
[ ye2 ] = EulerMod( f,a,b,h,alpha );
[ ye3 ] = EulerMill( f,a,b,h,alpha );
[ ye4 ] = RK4( f,a,b,h,alpha );
[t2,y2] = ode45(f, [a,b], alpha);
```

Taula valors

```
texa=[a:h:b];
yexa=g(texa);
format short g;
disp('          y(t)          Euler          EMod          EMill
      RK4')
disp([yexa;ye1;ye2;ye3;ye4]')
```

<i>y(t)</i>	<i>Euler</i>	<i>EMod</i>	<i>EMill</i>	<i>RK4</i>
1	1	1	1	1
1.0288	1	1.0313	1.0313	1.0288
1.1065	1.0625	1.1104	1.1104	1.1065
1.2224	1.1719	1.2268	1.2268	1.2224
1.3679	1.3164	1.3725	1.3725	1.3679

Taula errors

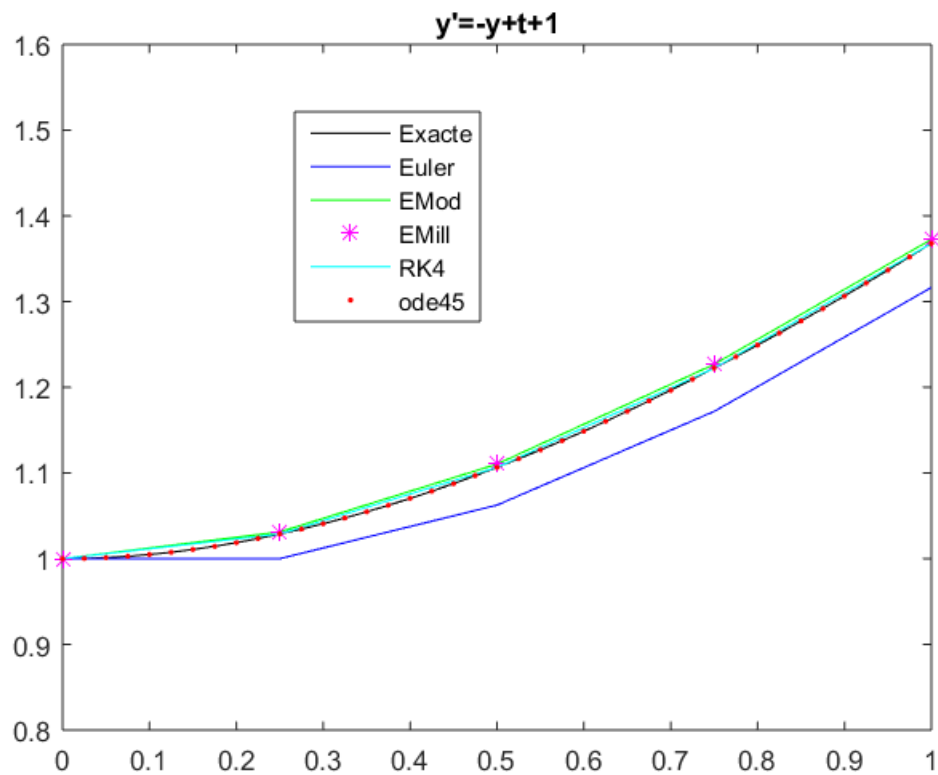
```
disp('      ')
```

```
disp('          Euler          EMod          EMill          RK4')
disp([abs(ye1-yexa);abs(ye2-yexa);abs(ye3-yexa);abs(ye4-yexa)]')
```

<i>Euler</i>	<i>EMod</i>	<i>EMill</i>	<i>RK4</i>
0	0	0	0
0.028801	0.0024492	0.0024492	7.8107e-06
0.044031	0.0038209	0.0038209	1.2166e-05
0.050492	0.0044706	0.0044706	1.4212e-05
0.051473	0.0046496	0.0046496	1.4758e-05

Gràfiques

```
yexa=g(t2);
plot(t2,yexa,'k',t1,ye1,'b',t1,ye2,'g',t1,ye3,'m*',t1,ye4,'c',t2,y2,'r.'),title('y
y+t+1')
legend('Exacte','Euler','EMod','EMill','RK4','ode45','Location','best')
axis([0,1,0.8,1.6])
```



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