

# Solucion de un sistema de EDO usando el Metodo de Euler

```
clear all;
clc
h = 0.01;
t = 0:h:1;
U0 = [1;1];
F = @(t,u) [3*u(1)+2*u(2)-(2*t^2+1)*exp(2*t);4*u(1)+u(2)+(t^2+2*t-4)*exp(2*t)];
```

## Implementado Euler

```
U(:,1)=U0;
n = length(t);
for i = 1:n-1
    U(:,i+1)=U(:,i)+h*F(t(i),U(:,i))
end
```

```
U = 2x2
    1.0000    1.0400
    1.0000    1.0100
U = 2x3
    1.0000    1.0400    1.0812
    1.0000    1.0100    1.0211
U = 2x4
    1.0000    1.0400    1.0812    1.1236
    1.0000    1.0100    1.0211    1.0333
U = 2x5
    1.0000    1.0400    1.0812    1.1236    1.1674
    1.0000    1.0100    1.0211    1.0333    1.0468
U = 2x6
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615
U = 2x7
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125    1.2590
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615    1.0776
U = 2x8
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125    1.2590    1.3069
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615    1.0776    1.0950
U = 2x9
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125    1.2590    1.3069 ...
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615    1.0776    1.0950
U = 2x10
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125    1.2590    1.3069 ...
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615    1.0776    1.0950
U = 2x11
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125    1.2590    1.3069 ...
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615    1.0776    1.0950
U = 2x12
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125    1.2590    1.3069 ...
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615    1.0776    1.0950
U = 2x13
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125    1.2590    1.3069 ...
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615    1.0776    1.0950
U = 2x14
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125    1.2590    1.3069 ...
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615    1.0776    1.0950
U = 2x15
    1.0000    1.0400    1.0812    1.1236    1.1674    1.2125    1.2590    1.3069 ...
    1.0000    1.0100    1.0211    1.0333    1.0468    1.0615    1.0776    1.0950
U = 2x16
```





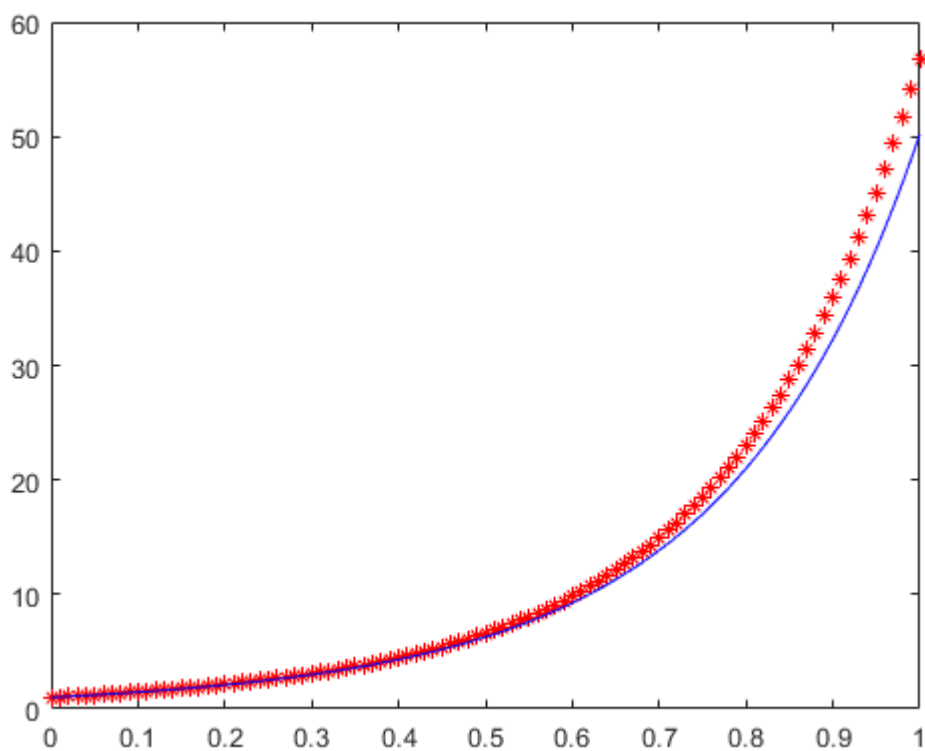
[illegible]



```
u1 = (1/3)*exp(5*t)-(1/3)*exp(-t)+exp(2*t);
u2 = (1/3)*exp(5*t)+(2/3)*exp(-t)+t.^2.*exp(2*t)
```

```
u2 =
    1.0000    1.0106    1.0223    1.0352    1.0494    1.0649    1.0819    1.1003 ...
```

```
hold on
plot(t,u1,'*r')
plot(t,U(1,:),'-b')
hold off
```



```
figure
hold on
plot(t,u2,'*r')
plot(t,U(2,:),'-g')
hold off
```

