

Contents

- Graficas

```
% https://la.mathworks.com/help/symbolic/solve-a-system-of-differential-equations.html
clc;
clear;

syms t vc(t) il(t) C1 C2 R C L;

%R=1;
%C=1;
%L=1;

%Condiciones Iniciales
%v0=1;
%i0=1;

%Valores de tiempo y paso
ti=0;
tf=10;
h=0.01;

%Matrices del circuito
%Lleva la forma de|:
%M*(dx/dt)+N*x=u(t);

M=[0 L;C 0];
N=[-1 0;1/R 1];
u=[0;0];

%Condiciones iniciales
%Xant=[v0;i0];

%Se lleva a la forma
% dx/dt=q(t)-P*x

P=-1.*(M\N)

x=[vc;il];
odes = diff(x) == P*x
%constantes = x(0) == Xant;
[vSol(t), iSol(t)] = dsolve(odes,constantes);
[vSol(t), iSol(t)] = dsolve(odes);
vSol(t) = simplify(vSol(t))
```

```
iSol(t) = simplify(iSol(t))
```

```
P =
```

```
[ -1/(C*R), -1/C]
[      1/L,    0]
```

```
odes(t) =
```

```
diff(vc(t), t) == - il(t)/C - vc(t)/(C*R)
diff(il(t), t) == vc(t)/L
```

```
vSol(t) =
```

```
C27*exp(-(t*(L + (L*(- 4*C*R^2 + L))^(1/2)))/(2*C*L*R)) + C28*exp(-(t*(L - (L*(- 4*C*R^2 + L))^(1/2)))/(2*C*L*R))
```

```
iSol(t) =
```

```
- (C28*exp(-(t*(L - (L*(- 4*C*R^2 + L))^(1/2)))/(2*C*L*R))*(L - (L*(- 4*C*R^2 + L))^(1/2)))/(2*C*L*R)
```

Graficas

```
clf
fplot(vSol,[ti,tf])
hold on
fplot(iSol,[ti,tf])
grid on
```

```
Error using fplot>singleFplot (line 229)
```

```
Input must be a function or functions of a single variable.
```

```
Error in fplot>@(f)singleFplot(cax,{f},limits,extraOpts,args) (line 193)
```

```
hObj = cellfun(@(f) singleFplot(cax,{f},limits,extraOpts,args),fn{1},'UniformOutput',false)
```

```
Error in fplot>vectorizeFplot (line 193)
```

```
hObj = cellfun(@(f) singleFplot(cax,{f},limits,extraOpts,args),fn{1},'UniformOutput',false)
```

```
Error in fplot (line 163)
```

```
hObj = vectorizeFplot(cax,fn,limits,extraOpts,args);
```

```
Error in ejemplo (line 47)
fplot(vSol,[ti,tf])
```

```
t=ti:h:tf;
v1=eval(subs(vSol));
i1=eval(subs(iSol));

%[T, lambda] = eig(P);
%syms t;
%elambda=diag(exp(eig(P).*t))
%H=T*elambda*inv(T)
%v=H*Xant;
```