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17/ENG05/004

MECHATRONICS ENGINEERING

MATLAB

1. commandwindow

clear

close all

syms t

v=100\*cos(120\*pi\*t)

c=100\*10^-6

q=c\*v

t=0:0.01:0.35

b=subs(q,t)

g=subs(v,t)

i=diff(q)

h=subs(i,t)

p=i\*v

m=subs(p\*t)

u=double(g)

figure(1)

plot(t,g,t,h,t,u)

plot(t,g,'blue',t,h,'red',t,u,'black')

axis tight

grid on

grid minor

xlabel('time(sec)')

ylabel('variable')

legend('voltage(V)','current(A)','power(W)')

2. commandwindow

clear

clc

close all

a=[1 -2 -1 3; 2 3 0 1; 1 0 -4 -2; 0 -1 3 1]

eigena=eig(a)

a =

 1 -2 -1 3

 2 3 0 1

 1 0 -4 -2

 0 -1 3 1

eigena =

 2.4323 + 2.2437i

 2.4323 - 2.2437i

 -1.9323 + 1.7651i

 -1.9323 - 1.7651i

>>the system is unstable because there is both presence of positive and negative eigen values