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**MATRIC NUMBER: 17/ENG05/022**

**DEPARTMENT: MECHATRONICS ENGINEERING**

commandwindow

clear

clc

close all

syms t

v(t)=110\*cos(120\*pi\*t)

i=diff(v)

p=diff(i)

t=0:0.01:0.35

vn=subs(v)

vnn=double(vn)

in=subs(i)

inn=double(in)

pn=subs(p)

pnn=double(pn)

plot(t,vnn)

hold on

plot(t,inn)

hold on

plot(t,pnn)

xlabel(‘time(secs)’)

ylabel(‘variable’)zx

legend ('voltage(v)','çurrent(i)', 'power(w)')

grid on

grid minor

v(t) =

110\*cos(120\*pi\*t)

i(t) =

-13200\*pi\*sin(120\*pi\*t)

p(t) =

-1584000\*pi^2\*cos(120\*pi\*t)

t =

 Columns 1 through 12

 0 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800 0.0900 0.1000 0.1100

 Columns 13 through 24

 0.1200 0.1300 0.1400 0.1500 0.1600 0.1700 0.1800 0.1900 0.2000 0.2100 0.2200 0.2300

 Columns 25 through 36

 0.2400 0.2500 0.2600 0.2700 0.2800 0.2900 0.3000 0.3100 0.3200 0.3300 0.3400 0.3500

vn(t) =

[ 110, - (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, - (55\*5^(1/2))/2 - 55/2, 110, - (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, - (55\*5^(1/2))/2 - 55/2, 110, - (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, - (55\*5^(1/2))/2 - 55/2, 110, - (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, - (55\*5^(1/2))/2 - 55/2, 110, - (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, - (55\*5^(1/2))/2 - 55/2, 110, - (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, - (55\*5^(1/2))/2 - 55/2, 110, - (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, (55\*5^(1/2))/2 - 55/2, - (55\*5^(1/2))/2 - 55/2, 110]

vnn =

 Columns 1 through 12

 110.0000 -88.9919 33.9919 33.9919 -88.9919 110.0000 -88.9919 33.9919 33.9919 -88.9919 110.0000 -88.9919

 Columns 13 through 24

 33.9919 33.9919 -88.9919 110.0000 -88.9919 33.9919 33.9919 -88.9919 110.0000 -88.9919 33.9919 33.9919

 Columns 25 through 36

 -88.9919 110.0000 -88.9919 33.9919 33.9919 -88.9919 110.0000 -88.9919 33.9919 33.9919 -88.9919 110.0000

in(t) =

[ 0, 3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), -3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), 3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), -3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), 0, 3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), -3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), 3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), -3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), 0, 3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), -3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), 3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), -3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), 0, 3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), -3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), 3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), -3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), 0, 3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), -3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), 3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), -3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), 0, 3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), -3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), 3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), -3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), 0, 3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), -3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), 3300\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2), -3300\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2), 0]

inn =

 1.0e+04 \*

 Columns 1 through 12

 0 2.4375 -3.9439 3.9439 -2.4375 0 2.4375 -3.9439 3.9439 -2.4375 0 2.4375

 Columns 13 through 24

 -3.9439 3.9439 -2.4375 0 2.4375 -3.9439 3.9439 -2.4375 0 2.4375 -3.9439 3.9439

 Columns 25 through 36

 -2.4375 0 2.4375 -3.9439 3.9439 -2.4375 0 2.4375 -3.9439 3.9439 -2.4375 0

pn(t) =

[ -1584000\*pi^2, 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2, 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2, 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2, 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2, 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2, 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2, 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), -1584000\*pi^2\*(5^(1/2)/4 - 1/4), 1584000\*pi^2\*(5^(1/2)/4 + 1/4), -1584000\*pi^2]

pnn =

 1.0e+07 \*

 Columns 1 through 12

 -1.5633 1.2648 -0.4831 -0.4831 1.2648 -1.5633 1.2648 -0.4831 -0.4831 1.2648 -1.5633 1.2648

 Columns 13 through 24

 -0.4831 -0.4831 1.2648 -1.5633 1.2648 -0.4831 -0.4831 1.2648 -1.5633 1.2648 -0.4831 -0.4831

 Columns 25 through 36

 1.2648 -1.5633 1.2648 -0.4831 -0.4831 1.2648 -1.5633 1.2648 -0.4831 -0.4831 1.2648 -1.5633



:The graph is unstable because the negative values are too high.