AREMU FAWAZ BABAJIDE

17/ENG05/008

MECHATRONICS ENGINEERING

ENG 281 ASSIGNMENT 3

commandwindow

clear

clc

close all

syms t

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

C = 100\*10^-6

Q = C\*V

t = 0:0.01:0.35

A = subs(Q,t)

B = subs(V,t)

I = diff(Q)

M = subs(I,t)

P = I\*V

C = subs(t)

Pt= double(C)

figure (1)

plot(t,B,t,M,t,Pt)

plot(t,B,'blue',t,m,'red',t,Pt,'black')

axis tight

grid on

grid minor

x label('time(sec)')

y label('variable')

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

V =

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

C =

 1.0000e-04

Q =

(11\*cos(120\*pi\*t))/1000

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

A =

[ 11/1000, - (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, - (11\*5^(1/2))/4000 - 11/4000, 11/1000, - (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, - (11\*5^(1/2))/4000 - 11/4000, 11/1000, - (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, - (11\*5^(1/2))/4000 - 11/4000, 11/1000, - (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, - (11\*5^(1/2))/4000 - 11/4000, 11/1000, - (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, - (11\*5^(1/2))/4000 - 11/4000, 11/1000, - (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, - (11\*5^(1/2))/4000 - 11/4000, 11/1000, - (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, (11\*5^(1/2))/4000 - 11/4000, - (11\*5^(1/2))/4000 - 11/4000, 11/1000]

B =

[ 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]

I =

-(33\*pi\*sin(120\*pi\*t))/25

M =

[ 0, (33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, -(33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, (33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, -(33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, 0, (33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, -(33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, (33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, -(33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, 0, (33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, -(33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, (33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, -(33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, 0, (33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, -(33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, (33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, -(33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, 0, (33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, -(33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, (33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, -(33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, 0, (33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, -(33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, (33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, -(33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, 0, (33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, -(33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, (33\*pi\*2^(1/2)\*(5^(1/2) + 5)^(1/2))/100, -(33\*2^(1/2)\*pi\*(5 - 5^(1/2))^(1/2))/100, 0]

P =

-(726\*pi\*cos(120\*pi\*t)\*sin(120\*pi\*t))/5

C =

[ 0, 1/100, 1/50, 3/100, 1/25, 1/20, 3/50, 7/100, 2/25, 9/100, 1/10, 11/100, 3/25, 13/100, 7/50, 3/20, 4/25, 17/100, 9/50, 19/100, 1/5, 21/100, 11/50, 23/100, 6/25, 1/4, 13/50, 27/100, 7/25, 29/100, 3/10, 31/100, 8/25, 33/100, 17/50, 7/20]

Pt =

 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

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**PLOT**



 Voltage (V)

 Current (A)

Power (W)