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**DEPARTMENT: MECHATRONICS ENGINEERING**

**MATRIC NO: 17/ENG05/037**

1. commandwindow
2. clear
3. clc
4. close all
5. syms t
6. V=110\*cos(120\*3.142\*t)
7. I=diff(V)
8. P=I\*V
9. t=0:0.01:0.35
10. Vn=subs(V)
11. Vnn=double(Vn)
12. In=subs(I)
13. Inn=double(In)
14. Pn=subs(P)
15. Pnn=double(Pn)
16. plot(t,Vnn,'b')
17. hold on
18. plot(t,Inn,'r')
19. hold on
20. plot(t,Pnn,'k')
21. legend('Voltage(V)','Current(A)','Power(W)')
22. grid on
23. grid minor

**SOLUTION**

V =

110\*cos((9426\*t)/25)

I =

-(207372\*sin((9426\*t)/25))/5

P =

-4562184\*cos((9426\*t)/25)\*sin((9426\*t)/25)

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 =

[ 110, 110\*cos(4713/1250), 110\*cos(4713/625), 110\*cos(14139/1250), 110\*cos(9426/625), 110\*cos(4713/250), 110\*cos(14139/625), 110\*cos(32991/1250), 110\*cos(18852/625), 110\*cos(42417/1250), 110\*cos(4713/125), 110\*cos(51843/1250), 110\*cos(28278/625), 110\*cos(61269/1250), 110\*cos(32991/625), 110\*cos(14139/250), 110\*cos(37704/625), 110\*cos(80121/1250), 110\*cos(42417/625), 110\*cos(89547/1250), 110\*cos(9426/125), 110\*cos(98973/1250), 110\*cos(51843/625), 110\*cos(108399/1250), 110\*cos(56556/625), 110\*cos(4713/50), 110\*cos(61269/625), 110\*cos(127251/1250), 110\*cos(65982/625), 110\*cos(136677/1250), 110\*cos(14139/125), 110\*cos(146103/1250), 110\*cos(75408/625), 110\*cos(155529/1250), 110\*cos(80121/625), 110\*cos(32991/250)]

Vnn =

 Columns 1 through 12

 110.0000 -88.9603 33.8896 34.1452 -89.1181 109.9997 -88.8019 33.6337 34.4007 -89.2755 109.9987 -88.6429

 Columns 13 through 24

 33.3776 34.6560 -89.4323 109.9970 -88.4835 33.1214 34.9110 -89.5885 109.9947 -88.3235 32.8649 35.1659

 Columns 25 through 36

 -89.7442 109.9918 -88.1630 32.6082 35.4205 -89.8994 109.9882 -88.0019 32.3514 35.6749 -90.0541 109.9839

In =

[ 0, -(207372\*sin(4713/1250))/5, -(207372\*sin(4713/625))/5, -(207372\*sin(14139/1250))/5, -(207372\*sin(9426/625))/5, -(207372\*sin(4713/250))/5, -(207372\*sin(14139/625))/5, -(207372\*sin(32991/1250))/5, -(207372\*sin(18852/625))/5, -(207372\*sin(42417/1250))/5, -(207372\*sin(4713/125))/5, -(207372\*sin(51843/1250))/5, -(207372\*sin(28278/625))/5, -(207372\*sin(61269/1250))/5, -(207372\*sin(32991/625))/5, -(207372\*sin(14139/250))/5, -(207372\*sin(37704/625))/5, -(207372\*sin(80121/1250))/5, -(207372\*sin(42417/625))/5, -(207372\*sin(89547/1250))/5, -(207372\*sin(9426/125))/5, -(207372\*sin(98973/1250))/5, -(207372\*sin(51843/625))/5, -(207372\*sin(108399/1250))/5, -(207372\*sin(56556/625))/5, -(207372\*sin(4713/50))/5, -(207372\*sin(61269/625))/5, -(207372\*sin(127251/1250))/5, -(207372\*sin(65982/625))/5, -(207372\*sin(136677/1250))/5, -(207372\*sin(14139/125))/5, -(207372\*sin(146103/1250))/5, -(207372\*sin(75408/625))/5, -(207372\*sin(155529/1250))/5, -(207372\*sin(80121/625))/5, -(207372\*sin(32991/250))/5]

Inn =

 1.0e+04 \*

 Columns 1 through 12

 0 2.4394 -3.9457 3.9426 -2.4312 -0.0101 2.4476 -3.9488 3.9394 -2.4230 -0.0203 2.4558

 Columns 13 through 24

 -3.9519 3.9362 -2.4148 -0.0304 2.4640 -3.9550 3.9330 -2.4065 -0.0405 2.4721 -3.9580 3.9298

 Columns 25 through 36

 -2.3983 -0.0507 2.4802 -3.9610 3.9265 -2.3900 -0.0608 2.4884 -3.9640 3.9233 -2.3817 -0.0710

Pn =

[ 0, -4562184\*cos(4713/1250)\*sin(4713/1250), -4562184\*cos(4713/625)\*sin(4713/625), -4562184\*cos(14139/1250)\*sin(14139/1250), -4562184\*cos(9426/625)\*sin(9426/625), -4562184\*cos(4713/250)\*sin(4713/250), -4562184\*cos(14139/625)\*sin(14139/625), -4562184\*cos(32991/1250)\*sin(32991/1250), -4562184\*cos(18852/625)\*sin(18852/625), -4562184\*cos(42417/1250)\*sin(42417/1250), -4562184\*cos(4713/125)\*sin(4713/125), -4562184\*cos(51843/1250)\*sin(51843/1250), -4562184\*cos(28278/625)\*sin(28278/625), -4562184\*cos(61269/1250)\*sin(61269/1250), -4562184\*cos(32991/625)\*sin(32991/625), -4562184\*cos(14139/250)\*sin(14139/250), -4562184\*cos(37704/625)\*sin(37704/625), -4562184\*cos(80121/1250)\*sin(80121/1250), -4562184\*cos(42417/625)\*sin(42417/625), -4562184\*cos(89547/1250)\*sin(89547/1250), -4562184\*cos(9426/125)\*sin(9426/125), -4562184\*cos(98973/1250)\*sin(98973/1250), -4562184\*cos(51843/625)\*sin(51843/625), -4562184\*cos(108399/1250)\*sin(108399/1250), -4562184\*cos(56556/625)\*sin(56556/625), -4562184\*cos(4713/50)\*sin(4713/50), -4562184\*cos(61269/625)\*sin(61269/625), -4562184\*cos(127251/1250)\*sin(127251/1250), -4562184\*cos(65982/625)\*sin(65982/625), -4562184\*cos(136677/1250)\*sin(136677/1250), -4562184\*cos(14139/125)\*sin(14139/125), -4562184\*cos(146103/1250)\*sin(146103/1250), -4562184\*cos(75408/625)\*sin(75408/625), -4562184\*cos(155529/1250)\*sin(155529/1250), -4562184\*cos(80121/625)\*sin(80121/625), -4562184\*cos(32991/250)\*sin(32991/250)]

Pnn =

 1.0e+06 \*

 Columns 1 through 12

 0 -2.1701 -1.3372 1.3462 2.1667 -0.0112 -2.1735 -1.3281 1.3552 2.1632 -0.0223 -2.1769

 Columns 13 through 24

 -1.3191 1.3641 2.1596 -0.0334 -2.1802 -1.3099 1.3731 2.1560 -0.0446 -2.1835 -1.3008 1.3819

 Columns 25 through 36

 2.1523 -0.0557 -2.1867 -1.2916 1.3908 2.1486 -0.0669 -2.1898 -1.2824 1.3996 2.1448 -0.0780

