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COMPUTER ENGINEERING
16/MHS01/219

```
A]
commandwindow
clear
clc
syms t
d =1.5*exp(-0.75*t)*sin(0.85*t)+(0.375*t)
tn =[0:0.01:2.5]
dn = subs(d,tn);

v = diff(d)
vn= subs(v,tn);
figure (1)
plot(tn,vn)
xlabel('time (min) ')
ylabel('velocity (m/min) ')
grid on
grid minor
axis tight
a = diff(v)
an = subs(a,tn)
figure (2)
plot(tn,an)
xlabel('time (min) ')
ylabel('acceleration (m/min^2) ');
grid on;
grid minor;
axis tight;

figure (3)
plot(tn,vn,tn,an)
xlabel('time (min) ')
ylabel('vsriable')
legend('velocity (m/min) ', 'acceleration (m/min^2) ')
axis tight
grid on
grid minor
```

OUTPUT

A =

$25*\sin(5*x)^{10}$

Aint =

$$(1575*x)/256 - (525*\sin(10*x))/512 + (75*\sin(20*x))/256 - (75*\sin(30*x))/1024 + (25*\sin(40*x))/2048 - \sin(50*x)/1024$$

Aintd =

$$(75*\sin(440/7))/256 - (525*\sin(220/7))/512 - (75*\sin(660/7))/1024 + (25*\sin(880/7))/2048 - \sin(1100/7)/1024 + 2475/128$$

Aintdd =

19.3282

v =

60.7456

>>

B) commandwindow

```
clear
```

```
clc
```

```
format short
```

```
C = [0 10 4 -2; -3 -17 1 2; 1 1 1 0; 8 -34 16 -10]
```

```
D = [-4; 2; 6; 4]
```

```
tosin = inv(C)
```

```
X = tosin*C
```

Output

C =

```
    0    10    4    -2
   -3   -17    1     2
    1     1    1     0
    8   -34   16   -10
```

D =

```
   -4
    2
    6
    4
```

tosin =

```
  -0.1786  -0.1020   0.5714   0.0153
    0.0357  -0.0153   0.0357  -0.0102
    0.1429   0.1173   0.3929  -0.0051
   -0.0357   0.1582   0.9643  -0.0612
```

X =

```
  1.0000  -0.0000   0.0000  -0.0000
    0      1.0000  -0.0000    0
    0      0.0000   1.0000  -0.0000
    0      0.0000  -0.0000   1.0000
```

>>

C]

```
commandwindow
```

```
clear
```

```
clc
```

```
syms x
```

```
y = 5*sin(5*x)^5;
```

```
A = y^2
```

```
Aint = int(A)
```

```
Aintd = int(A,0,(22/7))
```

```
Aintdd = double(Aintd)
```

```
v = (22/7)*Aintdd
```

Output

A =

$$25*\sin(5*x)^{10}$$

$$Aint =$$

$$(1575*x)/256 - (525*\sin(10*x))/512 + (75*\sin(20*x))/256 - (75*\sin(30*x))/1024 + (25*\sin(40*x))/2048 - \sin(50*x)/1024$$

$$Aintd =$$

$$(75*\sin(440/7))/256 - (525*\sin(220/7))/512 - (75*\sin(660/7))/1024 + (25*\sin(880/7))/2048 - \sin(1100/7)/1024 + 2475/128$$

$$Aintdd =$$

$$19.3282$$

$$v =$$

$$60.7456$$

>>