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DEP: MECHANICAL

MATRIC NO: 16/ENG06/031

LEVEL:200L

QUESTION 4

(a)

```
commandwindow
clear
clc
close all

A = [0,10,4,-2; -3,-17,1,2; 1,1,1,0; 8,-34,16,-10]
B = [-4,2,6,4]
P = inv(A)
T = P .* B
SAM = det(A)
EMMA = transpose(A)
```

OUTPUT

P =

-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

T =

0.7143	-0.2041	3.4286	0.0612
-0.1429	-0.0306	0.2143	-0.0408
-0.5714	0.2347	2.3571	-0.0204
0.1429	0.3163	5.7857	-0.2449

SAM =

-1568

EMMA =

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

(b)

```
commandwindow
clear
clc
close all
syms t
d = 1.5*exp(-0.75*t)*sin(0.85*t)+(0.375*t)
t = [0:0.01:2.5]
Vel = diff(d)
Vn = subs(Vel,t)
Acceleration = diff(Vel)
An = subs(Acceleration,t)
figure(1)
plot(t,Vn,t,An)
axis tight
grid on
grid minor
xlabel('time')
ylabel('distance')
legend('velocity(km/hr)','acceleration(km/hr^2)')
```

(c)

```
commandwindow
clear
clc
close all
syms x
y = 5 * (sin(5 *x)^5)
U = 3.142 * y^2
Uint = int(U,0,3.142)
```

<u>OUTPUT</u>

```
y =

5*sin(5*x)^5


U =

(1571*sin(5*x)^10)/20


Uint =
```

(4713*sin(1571/25))/5120 - (1571*sin(1571/10))/512000 - (32991*sin(1571/50))/10240 + (1571*sin(3142/25))/40960 - (4713*sin(4713/50))/20480 + 155486583/2560000