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DEPT : CIVIL ENGINEERING
MATRIC NO : 16/ENG03/051

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];  
Q = det(A);  
V = transpose(A);  
QQ = A^(-1);  
M = B*QQ;  
M =  
  
    1.5000    1.7143    4.0000   -0.3571
```

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];  
V = diff(d);  
Vn = subs(V,t)  
Acceleration = diff(V);
```

```

A = subs(Acceleration,t);

figure(1)
plot(t,Vn,t,A)

axis tight

grid on

grid minor

xlabel('Time')

ylabel('Variables')

legend('Velocity (km/h)', 'acceleration (km/h^2)')

```

C.

```

commandwindow

clear

clc

close all

syms x

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

Q = 3.142 * (5 * (sin (5 *x))^5)^2;

Qint = int(Q,0,3.142);

Qint =

(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

```