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16/ENG06/012

Mechanical Engineering

ENG281

Test

1.
```
commandwindow
clear
clc
close all
A=[0 10 4 -2;-3 -17 1 2;1 1 1 0;8 -34 16 -10]
Inverse=inv(A)
B=[-4;2;6;4]
X=Inverse*B
w=X(1,1)
x=X(2,1)
y=X(3,1)
z=X(4,1)
```

w=4 x=0 y=2 z=6

2.

```
commandwindow
clear
clc
close all
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)
figure(1)
plot(tn,dn)
xlabel(time(min)')
ylabel(distance(m)')
grid on
grid minor
axis tight
v=diff(d)
vn=subs(v,tn)
figure(2)
plot(tn,vn)
xlabel(time(min)')
ylabel(velocity(m/min)')
grid on
grid minor
axis tight
a=diff(v)
an=subs(a,tn)
figure(3)
plot(tn,an)
xlabel(time(min)')
```

```
ylabel(acceleration(m/min^2)')
grid on
grid minor
axis tight
figure(4)
plot(tn,vn,tn,an)
xlabel(time(min)')
ylabel(Variable')
legend(velocity(m/min)',acceleration(m/min^2)',location',best')
grid on
grid minor
axis tight
```

3.

```
commandwindow
clear
clc
syms x
y=5*sin(5*x)^5
Y=y^2
ZY=int(Y)*pi
dint=int(ZY,0,pi)
Volume=double(dint)
format long g

Volume =

          95.3806362724067
```