Exercise 1

X is a user defined vector

$Y = \sin x \, e^{-0.3x}$

The required is to plot Y versus X and put a red circle on the maximum and minimum values of the curve.

The code:

```
clc
clear
close all
a=input('xmin=');
b=input('xmax=');
x=linspace(a,b,1000);
y=input('f(x)=');
%------------PLOTTING--------------%
plot(x,y)
grid
hold on
%--------------Max and Min values--------------&
imax=find(y==max(y));
imin=find(y==min(y));
%----------Determining these values on the graph---------
-%
plot(x(imax),max(y),'ro')
plot(x(imin),min(y),'ko')
```

Exercise 2

X=1,2,3,4, ………………..., 100

The required is to get the average of every 10 elements.

The code:

```
clc
clear
close all
x=1:100;
for i=1:10:91
    m=x(i:i+9);
    Average=mean(m)
end
```

By running this code, *Average* variable will be displayed 10 times as a single value in each.

But if we want to display *Average* variable as a vector having 10 elements expressing the required means, the following code can be used.

The code:

```
clc
clear
close all
x=1:100;
j=1;
for i=1:10:91
    m=x(i:i+9);
    Average(j)=mean(m);
    j=j+1;
end
Average
```

Exercise 3

x=1, 2, 3, ..., 10   (1000 points)

y=sin x e^{-ax}

(a=0, 0.1, 0.3, 0.7,1)

The required is to draw 5 curves according to "a" value with red color for 0, blue for 0.1, black for 0.3, green for 0.7, and yellow for 1

The code:

```matlab
clc
clear
close all
x=linspace(0,10,1000);
a=input('Please enter the value of "a" =');
y=sin(x).*exp(-a*x);
switch a
    case 0
        plot(x,y,'r')
    case 0.1
        plot(x,y,'b')
    case 0.3
        plot(x,y,'k')
    case 0.7
        plot(x,y,'g')
    otherwise
        plot(x,y,'y')
end
```

Exercise 4

X is any vector with n elements.

The required is to develop a function taking vector X as the input and

outputs another vector Y whose elements are in the reverse order of that

of vector X.

i.e,   if X=1,2,3,4,5   therefore, Y should be=5,4,3,2,1

The code:

```
function[y]=Flipvec(x)
x=input('Enter the X vector:');
n=length(x);
for i=0:n-1
    y(i+1)=x(length(x)-i);
end
y=y
```

Exercise 5

A is 2x2 matrix.

The required is to calculate X which is equal to the square root of the summation of the square of all the matrix elements.

The required also is to calculate a matrix B which is a result of dividing each row in matrix A by the maximum value of its elements.

The code:

```
clc
clear
close all
A=input('Enter "A" Matrix');
x=sqrt(A(1,1)^2+A(1,2)^2+A(2,1)^2+A(2,2)^2)
max1=max(A(1,1),A(1,2));
max2=max(A(2,1),A(2,2));
B=[A(1,1)/max1 A(1,2)/max1;A(2,1)/max2,A(2,2)/max2]
```