



Ahsanullah University of Science and Technology

LAB REPORT

Course No: *EEE3110*

Course Name: *Numerical Technique Laboratory*

Exp No:03

Exp Name: Curve Fitting

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- Year: 3 , Semester: 1
 - Section: B-2
- Department of *EEE*.

Exercise1

The MATLAB R2020a interface displays the following code in the Editor window:

```
1 clc
2 clear all
3 close all
4 n=6;
5 x=(0:5);
6 y=[2.1 7.7 13.6 27.2 40.9 61.1];
7 sumx=sum(x);
8 sumxsq=sum(x.^2);
9 sumxcu=sum(x.^3);
10 sumxf=sum(x.^4);
11 sumy=sum(y);
12 sumxy=sum(x.*y);
13 sumxsgy=sum(x.^2.*y);
14 a=[n sumx sumxsq sumxcu sumxf sumxsgy];
15 b=[sumy sumxy sumxsgy];
16 ans=linsolve(a,b);
17 a0=ans(1)
18 a1=ans(2)
19 a2=ans(3)
```

The Command Window shows the output of the script:

```
2.4786

a1 =

2.3593

a2 =
```

The Workspace window shows the following variables:

Name	Value
a	[6.15.55 15.55 225.55 ...]
a0	2.4786
a1	2.3593
a2	1.8607
ans	[2.4786 2.3593 1.8607]
b	[152.6000 385.6000 2...
n	6
sumx	15
sumxcu	225
sumxf	979
sumxsq	55
sumxsgy	2.4088e+03
sumy	385.6000
sumxy	152.6000
x	[0 1 2 3 4 5]
y	[2.1000 7.7000 13.600...

Exercise2

The MATLAB R2020a interface displays the following code in the Editor window:

```
1 clc
2 clear all;
3 close all;
4 x=(1:5);
5 x1=log10(x);
6 y=[.5 1.7 3.4 5.7 8.4];
7 y1=log10(y);
8 n=5;
9 sumx=sum(x1);
10 sumy=sum(y1);
11 sumxy=sum(x1.*y1);
12 sumxsq=sum(x1.^2);
13 a=[n sumx sumy sumxy];
14 b=[sumy sumxy];
15 a=linsolve(a,b);
16 p2=10^a(1)
17 q2=a(2)
```

The Command Window shows the output of the script:

```
p2 =

0.6745

q2 =

1.4410
```

The Workspace window shows the following variables:

Name	Value
a	[-0.17710 1.4410]
b	[2.1411 78.9000]
n	5
p2	0.6745
q2	1.4410
sumx	2.0792
sumxsq	55
sumy	78.9000
sumxy	2.1811
x	[1 2 3 4 5]
x1	[0.0 0.3010 0.4771 0.602...
y	[0.5000 1.7000 3.4000...
y1	[-0.3010 0.2304 0.531...

Assignment

The image displays the MATLAB R2020a software interface. The main window is divided into several panes:

- Current Folder:** Shows the file structure of the current project, including 'assignment.asv', 'assignment.m', 'exe1.asv', 'exe1.m', 'exe2.asv', and 'exe2.m'.
- Editor:** Contains the MATLAB script 'assignment.m'. The script is as follows:

```
1 clc
2 clear all
3 close all
4 %order input
5 d=input('order=');
6 %test data
7 x=(0:7);
8 y=[2.1 7.7 13.6 27.2 40.9 61.1 66 67];
9 %---
10 %a matrix
11 for m=1:d+1
12     for s=1:d+1
13         a(m,s)=sum(x.^(m+s-2));
14     end
15 end
16 %b matrix
17 for m=1:d+1
18     b(m,1)=sum((x.^(m-1)).*y);
19 end
20 %solve of a0,a1,a2,...,an
21 ans=linsolve(a,b)
22 k=ans';
23 aa=flipr(k);
24 ym=polyval(aa,x);
25 plot(x,y,'r')
26 hold on
27 plot(x,ym)
28
```
- Workspace:** Displays the variables defined in the script, including 'a', 'ans', 'b', 'd', 'm', 'n', 's', 'x', 'y', and 'ym'.
- Command Window:** Shows the output of the script, including the prompt 'New to MATLAB? See resources for Getting Started.'

The MATLAB logo and version number 'MATLAB R2020a' are visible in the top left corner. The bottom status bar shows the system clock as 11:43 PM on 15-Jun-22.

MATLAB R2020a

HOME PLOTS APPS EDITOR PUBLISH VIEW

File Edit View Tools Desktop Window Help

Current Folder: C:\Users\User\Desktop\MATLAB\report3

Editor: C:\Users\User\Desktop\MATLAB\report3\assignment.m

```
1 clc
2 clear all
3 close all
4 %order input
5 d=input('order=');
6 %test data
```

Command Window

```
New to MATLAB? See resources for Getting Started.

order=5

ans =

    2.0282
   11.7641
  -10.0096
    4.9239
   -0.7900
    0.0405

fx >>
```

Workspace

Name	Value
d	5
ans	[0.0405 -0.7900 4.9239...]
ans	[2.0282 11.7641 -10.0096...]
d	5
x	[0.1 2.3 4.5 6.7]
y	[2.1000 7.7000 13.8000...]
ym	[2.0282 11.7641 -10.0096...]



