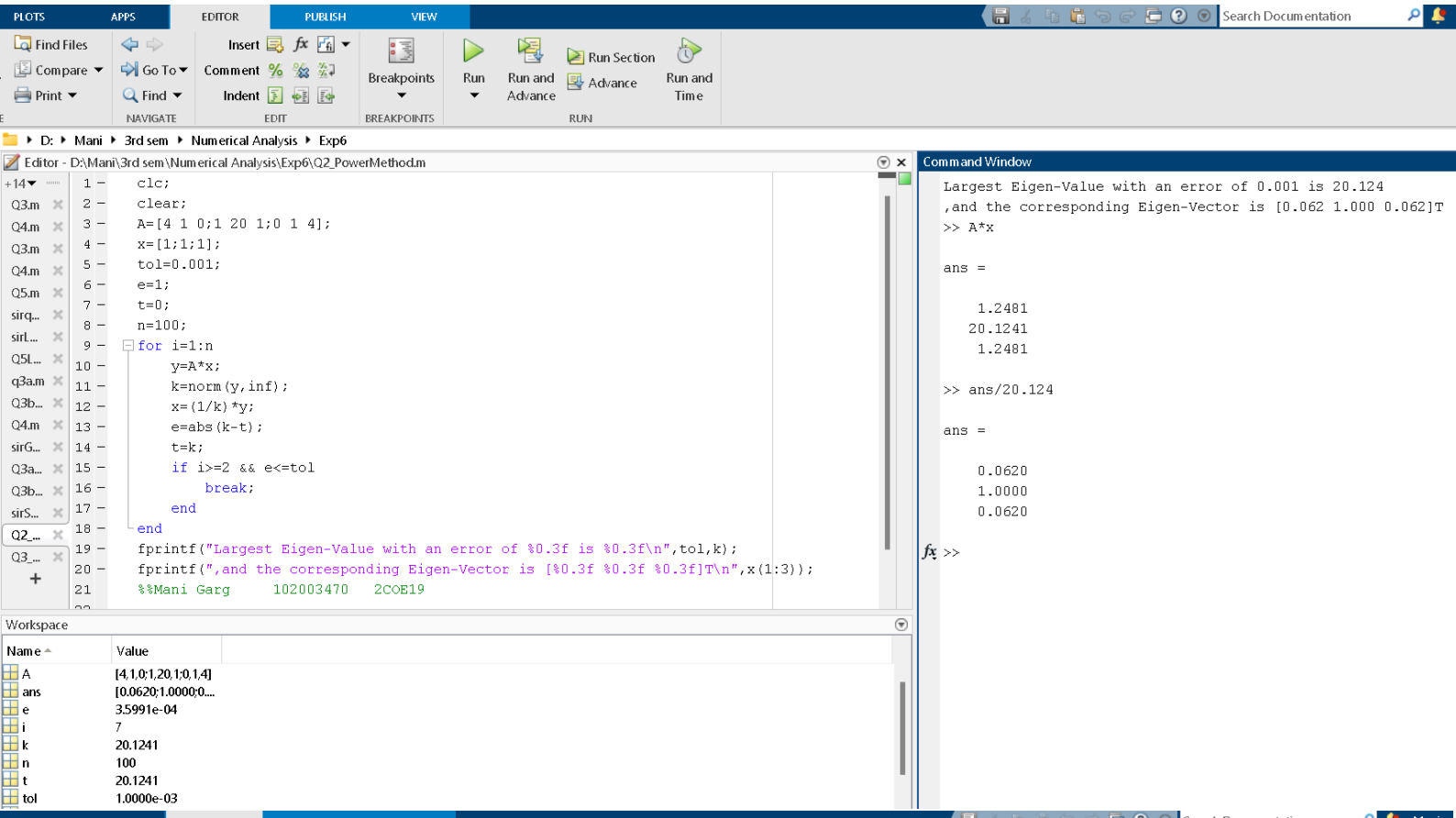
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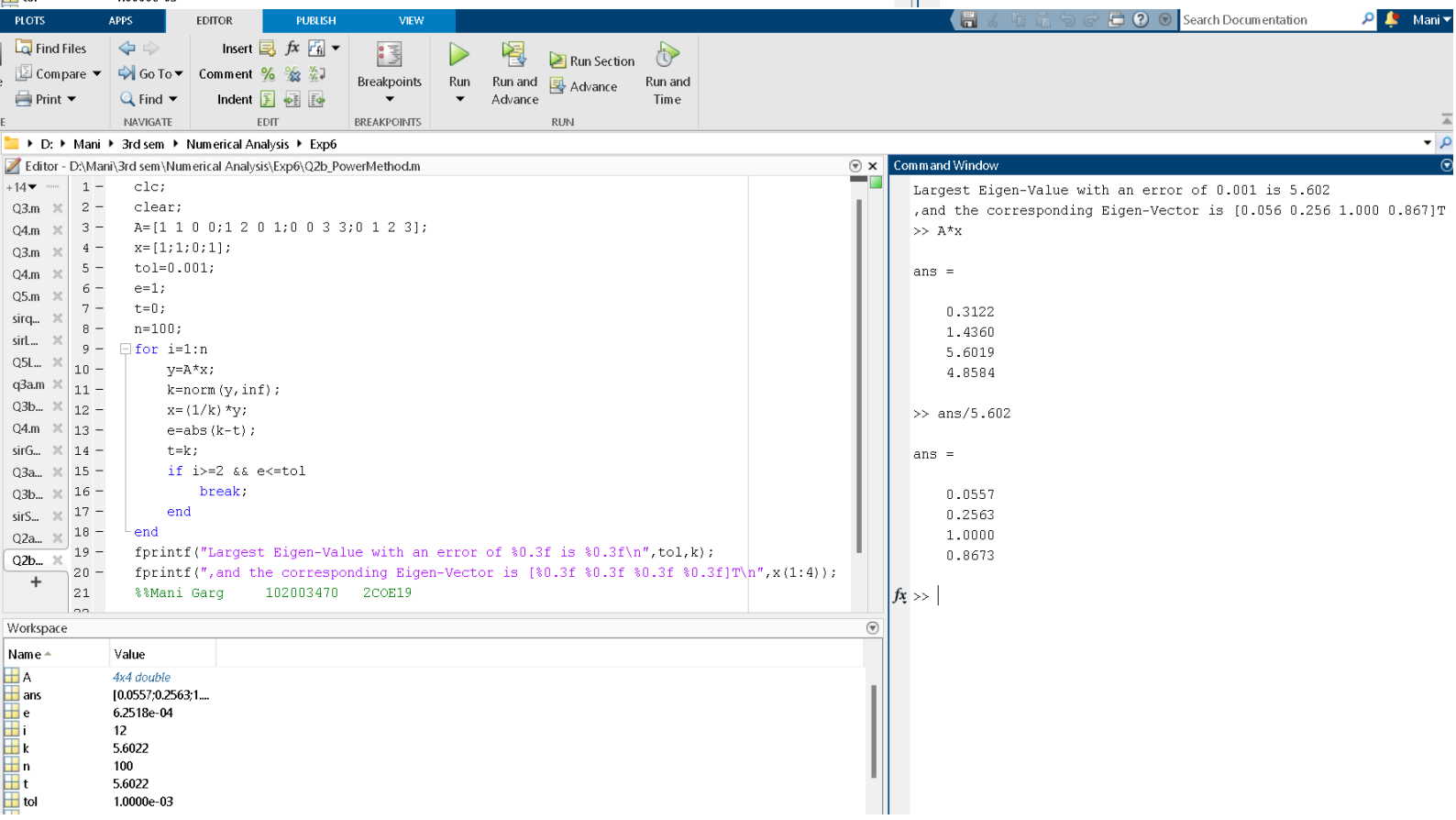
clc;
clear;
A=[4 1 0;1 20 1;0 1 4];
x=[1;1;1];
tol=0.001;
e=1;
t=0;
n=100;
for i=1:n
y=A*x;
k=norm(y,inf);
x=(1/k)*y;
e=abs(k-t);
t=k;
if i>=2 && e<=tol
break;
end
end
fprintf("Largest Eigen-Value with an error of %0.3f is %0.3f\n",tol,k);
fprintf(",and the corresponding Eigen-Vector is [%0.3f %0.3f %0.3f]T\n",x(1:3));
%%Mani Garg 102003470 2COE19
Command Window
Largest Eigen-Value with an error of 0.001 is 20.124
,and the corresponding Eigen-Vector is [0.062 1.000 0.062]T
>> A*x
ans =
1.2481
20.1241
1.2481
>> ans/20.124
ans =
0.0620
1.0000
0.0620
>>
Workspace
Name
Value
A [4,1,0;1,20,1;0,1,4]
ans [0.0620;1.0000;0....
e 3.5991e-04
i 7
k 20.1241
n 100
t 20.1241
tol 1.0000e-03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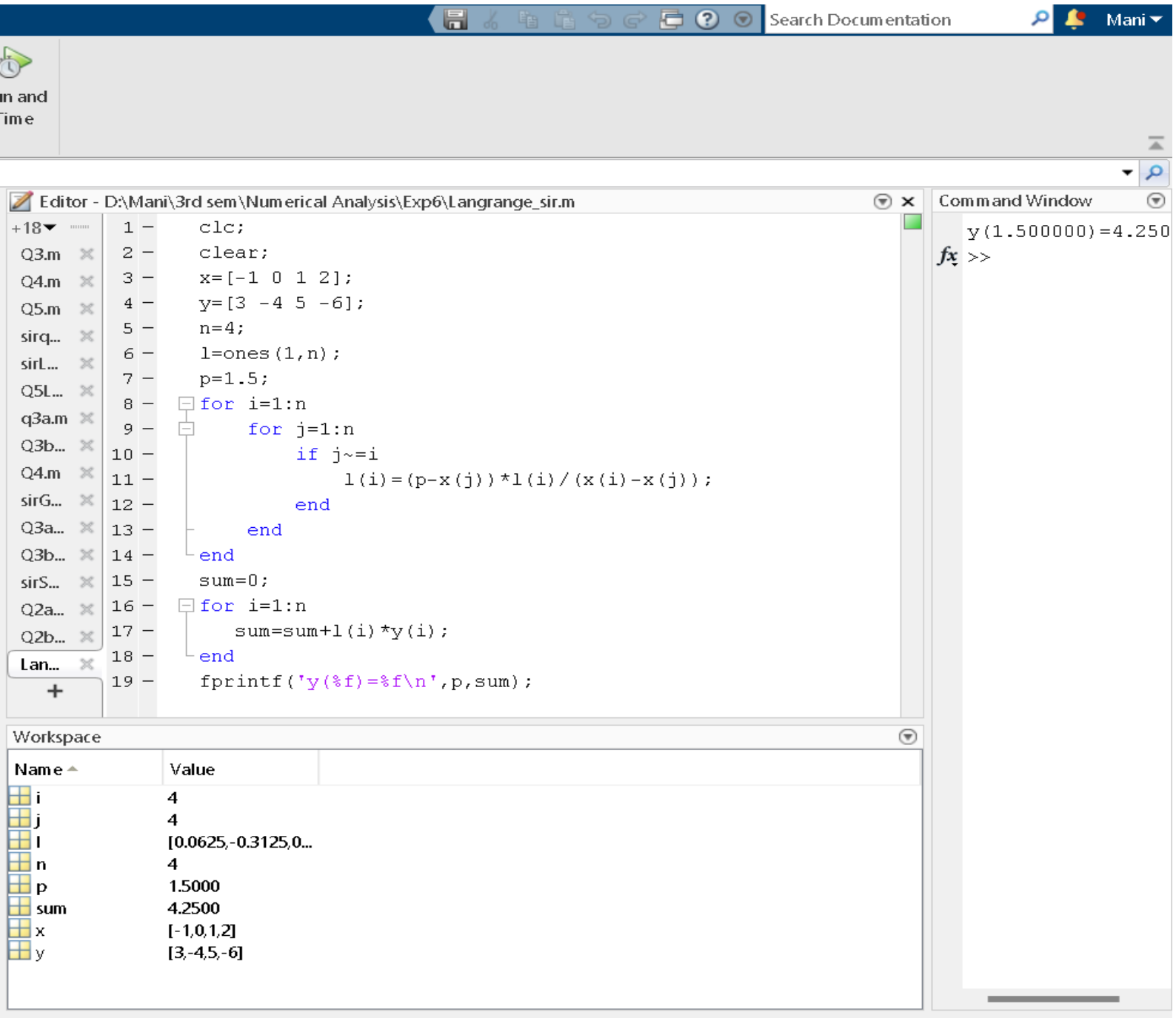
D: ▸ Mani ▸ 3rd sem ▸ Numerical Analysis ▸ Exp6
Editor - D:\Mani\3rd sem\Numerical Analysis\Exp6\Q2b_PowerMethod.m
clc;
clear;
A=[1 1 0 0;1 2 0 1;0 0 3 3;0 1 2 3];
x=[1;1;0;1];
tol=0.001;
e=1;
t=0;
n=100;
for i=1:n
y=A*x;
k=norm(y,inf);
x=(1/k)*y;
e=abs(k-t);
t=k;
if i>=2 && e<=tol
break;
end
end
fprintf("Largest Eigen-Value with an error of %0.3f is %0.3f\n",tol,k);
fprintf(",and the corresponding Eigen-Vector is [%0.3f %0.3f %0.3f %0.3f]T\n",x(1:4));
%%Mani Garg 102003470 2COE19
Command Window
Largest Eigen-Value with an error of 0.001 is 5.602
,and the corresponding Eigen-Vector is [0.056 0.256 1.000 0.867]T
>> A*x
ans =
0.3122
1.4360
5.6019
4.8584
>> ans/5.602
ans =
0.0557
0.2563
1.0000
0.8673
>>
Workspace
Name
Value
A 4x4 double
ans [0.0557;0.2563;1....
e 6.2518e-04
i 12
k 5.6022
n 100
t 5.6022
tol 1.0000e-03




```
clc;
clear;
x=[-1 0 1 2];
y=[3 -4 5 -6];
n=4;
l=ones(1,n);
p=1.5;
for i=1:n
    for j=1:n
        if j~=i
            l(i)=(p-x(j))*l(i)/(x(i)-x(j));
        end
    end
end
sum=0;
for i=1:n
   sum=sum+l(i)*y(i);
end
fprintf('y(%f)=%f\n',p,sum);
```

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D: ▸ Mani ▸ 3rd sem ▸ Numerical Analysis ▸ Exp6

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```
1  clc;
2  clear;
3  x=[0 8 16 24 32 40];
4  y=[14.621 11.843 9.870 8.418 7.305 6.413];
5  n=6;
6  p=[15 27];
7  for k=1:2
8      l=ones(1,n);
9  for i=1:n
10     for j=1:n
11         if j~=i
12             l(i)=(p(k)-x(j))*l(i)/(x(i)-x(j));
13         end
14     end
15 end
16 sum=0;
17 for i=1:n
18    sum=sum+l(i)*y(i);
19 end
20 fprintf('y(%f)=%f\n',p(k),sum);
21 end
```

Command Window

```
y(15.000000)=10.083444
y(27.000000)=7.968239
>>
```

Workspace

Name	Value
i	6
j	6
k	2
l	[-0.0104,0.0736,-...
n	6
p	[15,27]
sum	7.9682
x	[0,8,16,24,32,40]

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Editor - D:\Mani\3rd sem\Numerical Analysis\Exp6\Q5_Lagrange.m

```
1  clc;
2  clear;
3  x=[0 pi/4 2*pi/4 3*pi/4 4*pi/4 5*pi/4 6*pi/4 7*pi/4 8*pi/4];
4  n=9;
5  for i=1:n
6      y(i)=(sin(x(i)))^2;
7  end
8  p=[0.5 3.5 5.5 6];
9  for k=1:4
10     l=ones(1,n);
11 for i=1:n
12     for j=1:n
13         if j~=i
14             l(i)=(p(k)-x(j))*l(i)/(x(i)-x(j));
15         end
16     end
17 end
18 sum=0;
19 for i=1:n
20    sum=sum+l(i)*y(i);
21 end
22 fprintf('y(%f)=%f\n',p(k),sum);
23 end
```

Command Window

```
y(0.500000)=0.282484
y(3.500000)=0.122426
y(5.500000)=0.498042
y(6.000000)=0.174173
>>
```

Workspace

Name	Value
i	9
j	9
k	4
l	[-0.0156,0.1440,-...
n	9