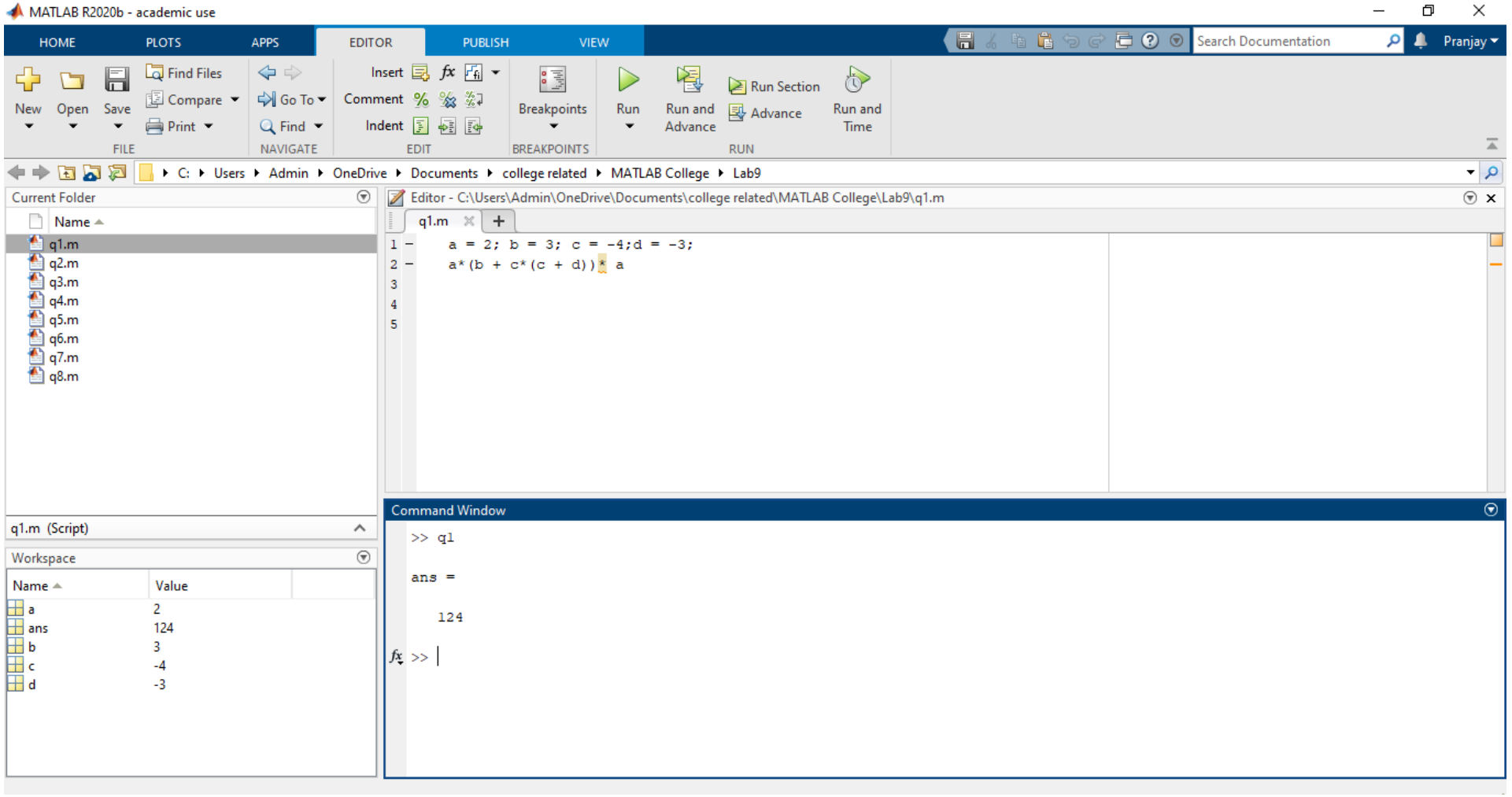
OC EXPERIMENT LAB 9

TITLE: Writing MATLAB programs

NAME: Yash Gupta

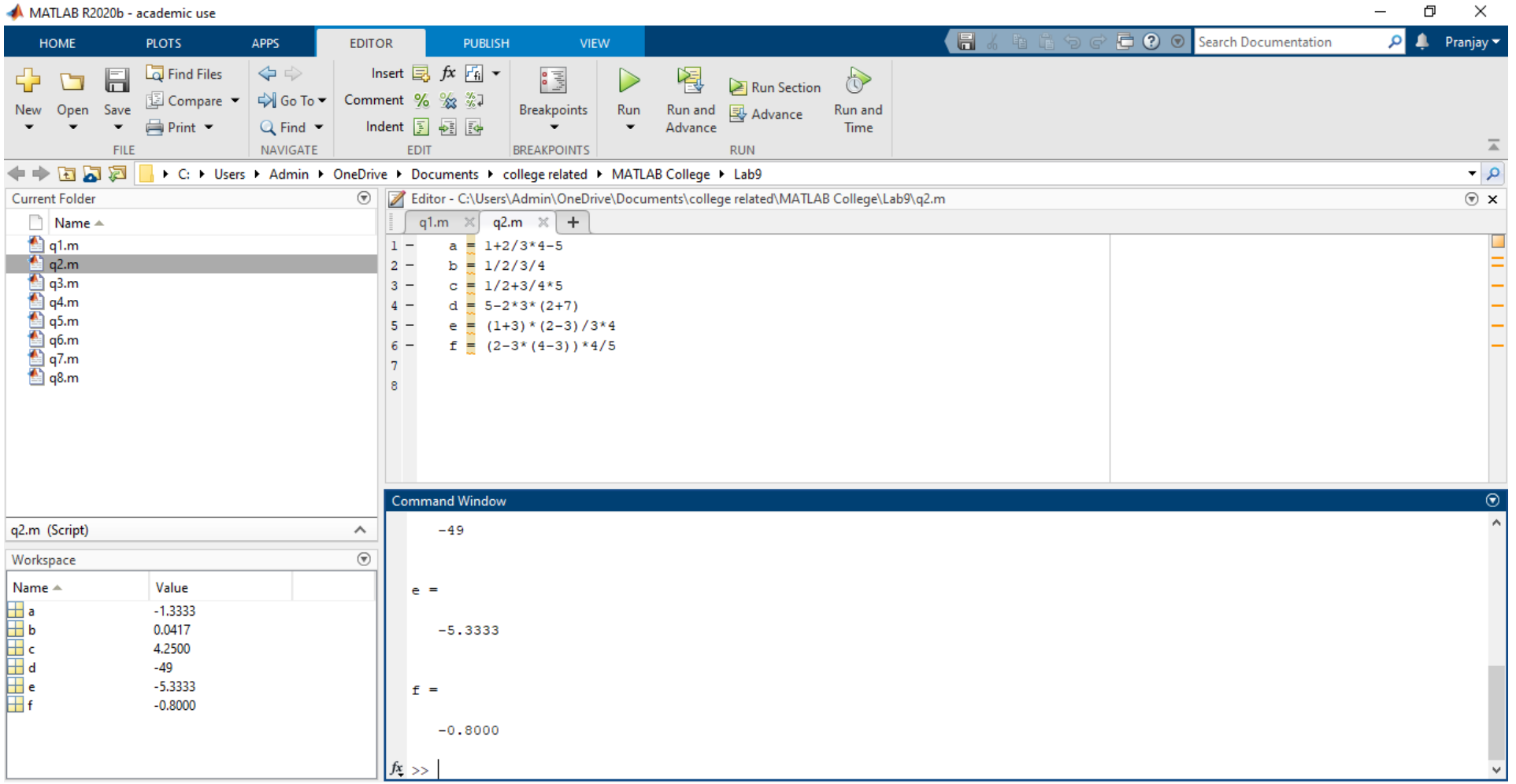
ROLL NO: S20200010234

Q1. Determine the value of the expression a (b + c (c + d)) a using MATLAB, where a = 2, b = 3, c = −4 and d = −3.


MATLAB R2020b - academic use
HOME
PLOTS
APPS
EDITOR
PUBLISH
VIEW
Search Documentation
Pranjay
New
Open
Save
Find Files
Compare
Print
FILE
Go To
Find
NAVIGATE
Insert
Comment
Indent
EDIT
Breakpoints
BREAKPOINTS
Run
Run and Advance
Run Section
Advance
Run and Time
RUN
C: ▸ Users ▸ Admin ▸ OneDrive ▸ Documents ▸ college related ▸ MATLAB College ▸ Lab9
Current Folder
Name
q1.m
q2.m
q3.m
q4.m
q5.m
q6.m
q7.m
q8.m
Editor - C:\Users\Admin\OneDrive\Documents\college related\MATLAB College\Lab9\q1.m
q1.m
1 - a = 2; b = 3; c = -4;d = -3;
2 - a*(b + c*(c + d))* a
3
4
5
q1.m (Script)
Workspace
Name
Value
a 2
ans 124
b 3
c -4
d -3
Command Window
>> q1
ans =
124
>>

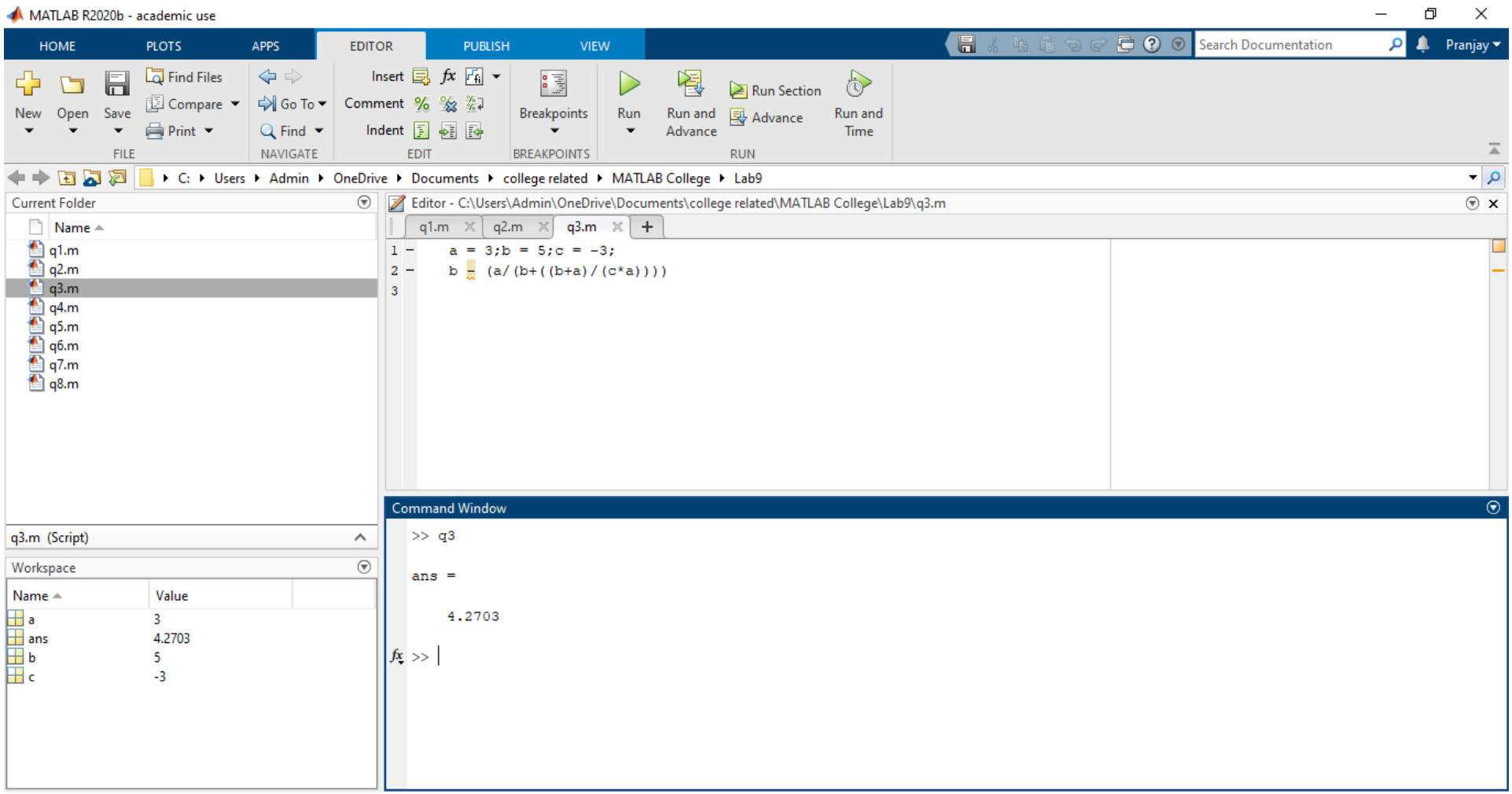
Q2. Evaluate the MATLAB expressions by hand and then check answers with MATLAB.

```
1+2/3*4-5
1/2/3/4
1/2+3/4*5
5-2*3*(2+7)
(1+3)*(2-3)/3*4
(2-3*(4-3))*4/5
```

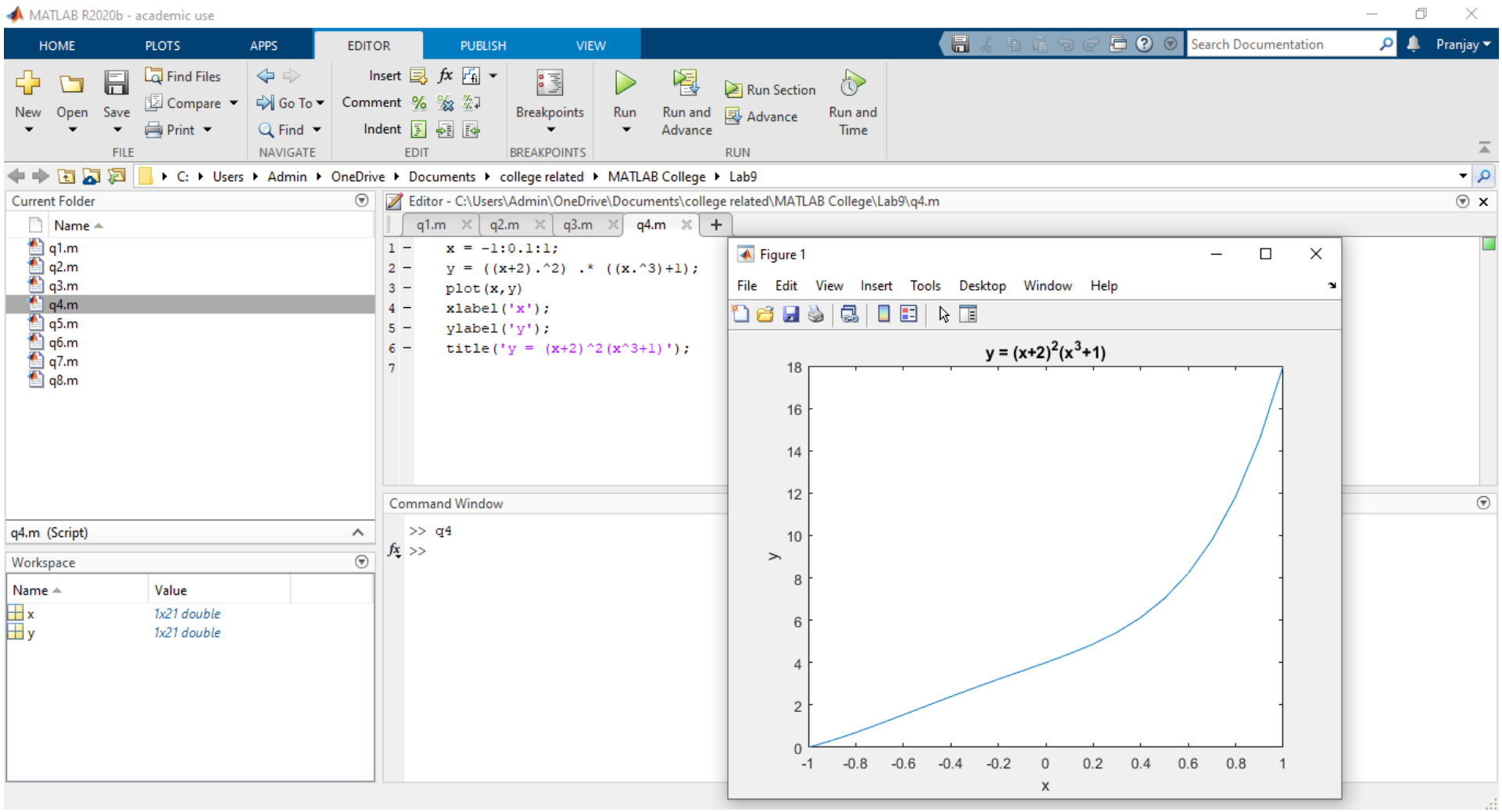

MATLAB R2020b - academic use
HOME
PLOTS
APPS
EDITOR
PUBLISH
VIEW
Search Documentation
Pranjay
New
Open
Save
Find Files
Compare
Print
FILE
Go To
Find
NAVIGATE
Insert
Comment
Indent
EDIT
Breakpoints
BREAKPOINTS
Run
Run and Advance
Run Section
Advance
Run and Time
RUN
C: ▸ Users ▸ Admin ▸ OneDrive ▸ Documents ▸ college related ▸ MATLAB College ▸ Lab9
Current Folder
Name
q1.m
q2.m
q3.m
q4.m
q5.m
q6.m
q7.m
q8.m
Editor - C:\Users\Admin\OneDrive\Documents\college related\MATLAB College\Lab9\q2.m
q1.m
q2.m
1 - a = 1+2/3*4-5
2 - b = 1/2/3/4
3 - c = 1/2+3/4*5
4 - d = 5-2*3*(2+7)
5 - e = (1+3)*(2-3)/3*4
6 - f = (2-3*(4-3))*4/5
7
8
q2.m (Script)
Workspace
Name
Value
a -1.3333
b 0.0417
c 4.2500
d -49
e -5.3333
f -0.8000
Command Window
-49
e =
-5.3333
f =
-0.8000
>>

Q3. Use MATLAB to calculate the expression where a = 3, b = 5 and c = −3.

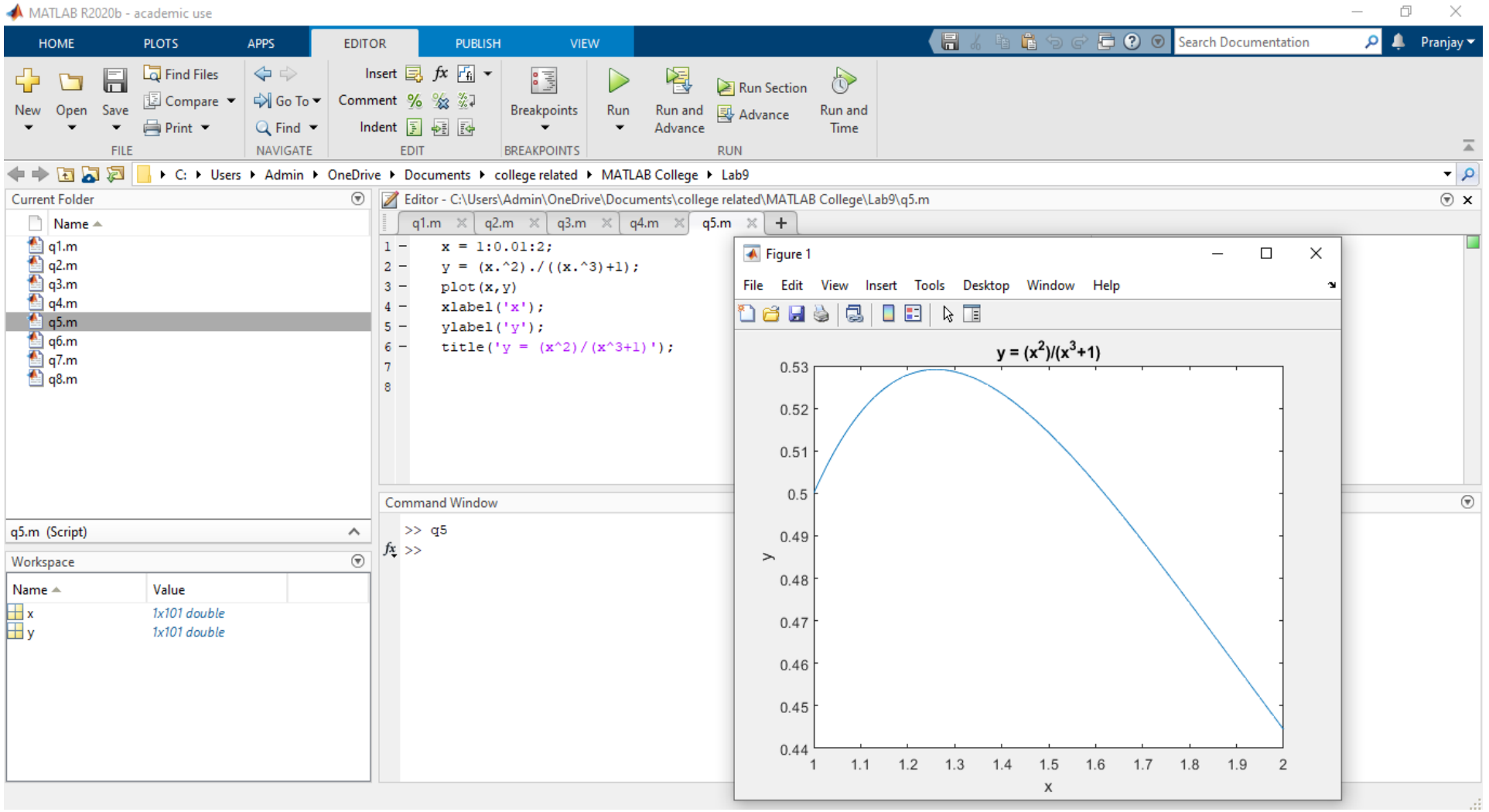
$$b - \frac{a}{b + \frac{b+a}{ca}}$$



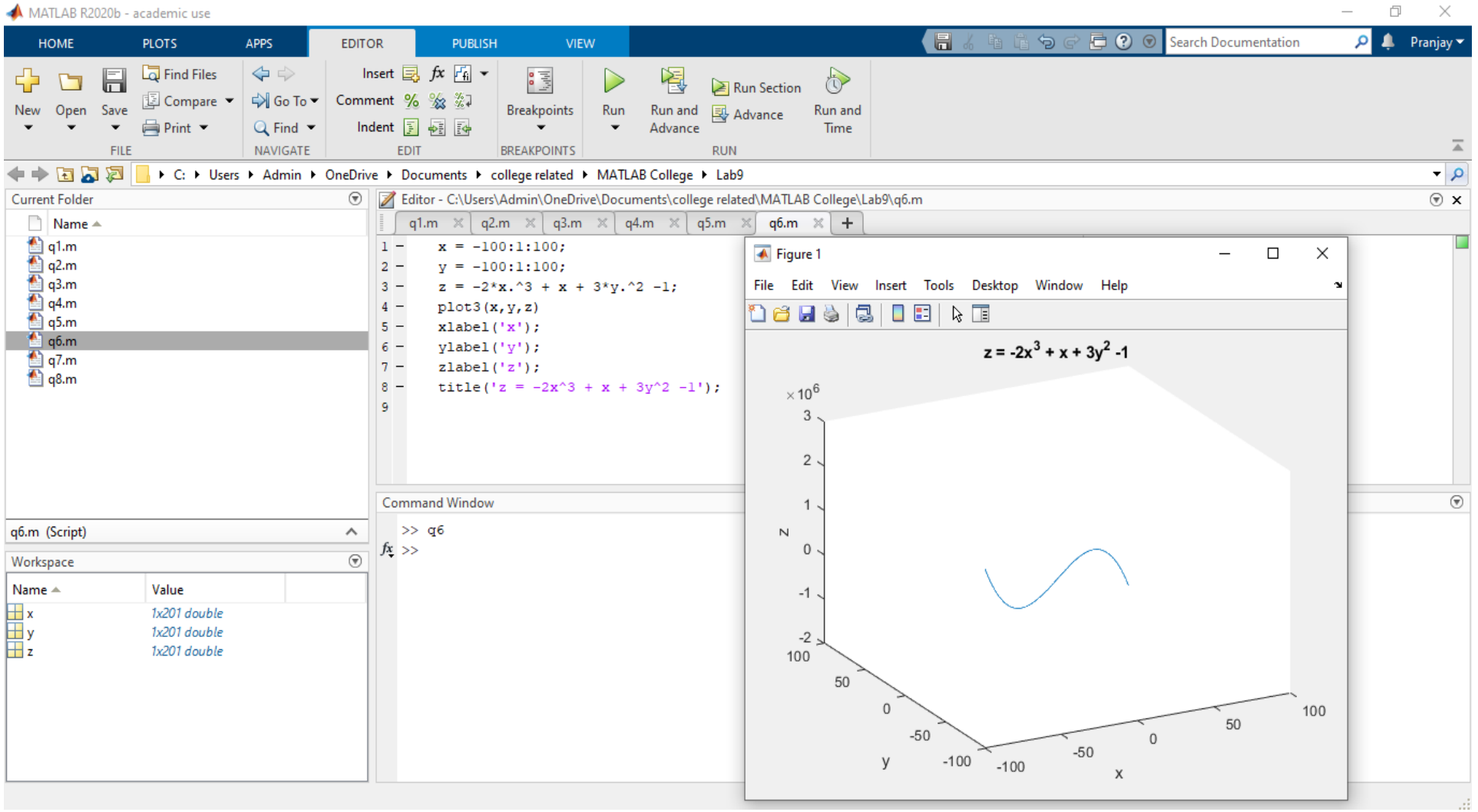
Q4. Construct the polynomial $y = (x+2)^2(x^3+1)$ for values of x from minus one to one in steps of 0.1.



Q5. Construct the function $y = \frac{x^2}{x^3+1}$ for values of x from one to two in steps of 0.01



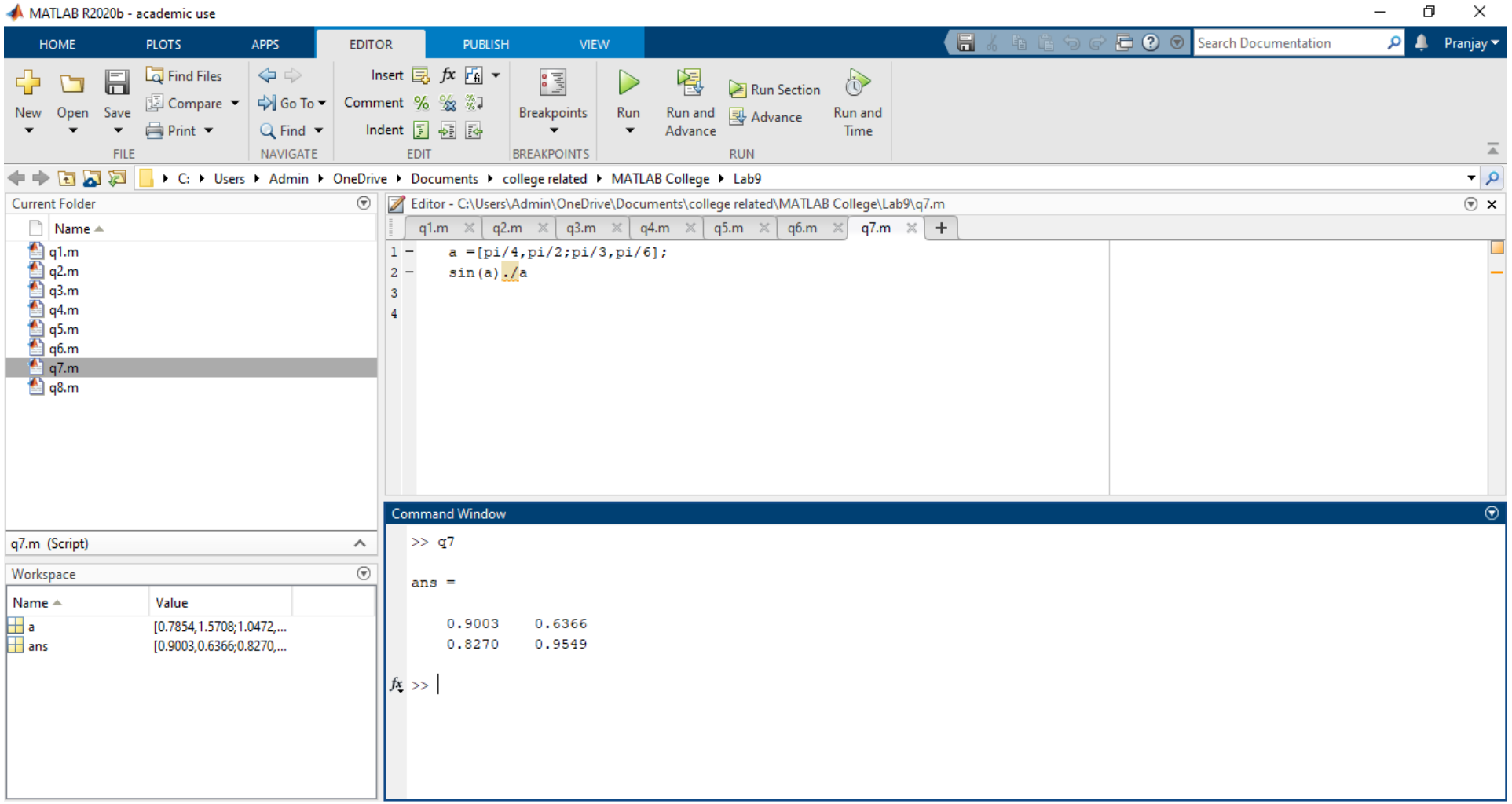
Q6. Plot the function $z = -2x^3 + x + 3y^2 - 1$



Q7. Consider the matrix $\mathbf{A} = \begin{pmatrix} \frac{\pi}{4} & \frac{\pi}{2} \\ \frac{\pi}{3} & \frac{\pi}{6} \end{pmatrix}$.

We wish to determine the matrix whose elements take the values sin x/x where x corresponds to the elements of the matrix A. In other words, we want to calculate the matrix

$$\begin{pmatrix} \frac{4}{\pi}\sin\frac{\pi}{4} & \frac{2}{\pi}\sin\frac{\pi}{2} \\ \frac{3}{\pi}\sin\frac{\pi}{3} & \frac{6}{\pi}\sin\frac{\pi}{6} \end{pmatrix}.$$


MATLAB R2020b - academic use
HOME
PLOTS
APPS
EDITOR
PUBLISH
VIEW
Search Documentation
Pranjay
New
Open
Save
Find Files
Compare
Print
FILE
Go To
Find
NAVIGATE
Insert
Comment
Indent
EDIT
Breakpoints
BREAKPOINTS
Run
Run and Advance
Run Section
Advance
Run and Time
RUN
C: ▸ Users ▸ Admin ▸ OneDrive ▸ Documents ▸ college related ▸ MATLAB College ▸ Lab9
Current Folder
Name
q1.m
q2.m
q3.m
q4.m
q5.m
q6.m
q7.m
q8.m
Editor - C:\Users\Admin\OneDrive\Documents\college related\MATLAB College\Lab9\q7.m
q1.m
q2.m
q3.m
q4.m
q5.m
q6.m
q7.m
1 a =[pi/4,pi/2;pi/3,pi/6];
2 sin(a)./a
3
4
q7.m (Script)
Workspace
Name
Value
a
[0.7854,1.5708;1.0472,...
ans
[0.9003,0.6366;0.8270,...
Command Window
>> q7
ans =
0.9003 0.6366
0.8270 0.9549
>>

Q8. Determine the eigenvalues and eigenvectors of the matrix $\begin{pmatrix} 1 & 2 \\ 3 & 2 \end{pmatrix}$