### **FIRST WEEK:**

```
2) Simple Matrices:
clc
a=[123; 456; 789]
b=[04-2; 4-28; 139]
c=a+b
d=a-b
e=a*b
```

```
♠ MATLAB R2021a - academic use

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→ Table 2018 | Documents → MATLAB

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[1,2,3;4,5,6;7,8,9]

[0,4,-2;4,-2,8;1,3,9]

[1,6,1;8,3,14;8,11,...

[1,-2,5;0,7,-2;6,5,0]

[11,9,41;26,24,86;...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              4
15
```

```
3) Code to add the matrix:
clc
%code to add the matrix
a=input('Enter the 3x3 matrix A:')
b=[0 4 -2; 4 -2 8; 1 3 9]
bl=randi([110], 3, 3)
c=a+b+bl
d=a-b-bl
e=a*b*bl
```

```
♠ MATLAB R2021a - academic use

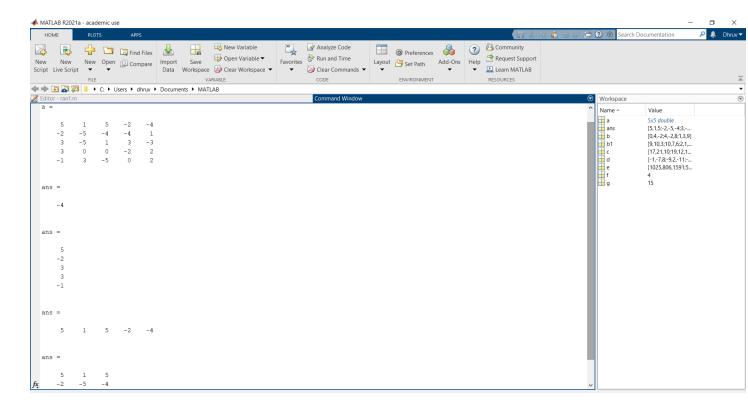
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New New Open ☐ Compare Import Save ☐ Open Variable ▼ Favorites ☐ Run and Time Data Workspace ☐ Clear Workspace ▼ Clear Workspace ▼
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Enter the 3x3 matrix A:[8 7 9; 5 7 3; 1 2 0]
                                                                                                                                                                                                      Value
                                                                                                                                                                                                      [8,7,9;5,7,3;1,2,0]
[0,4,-2;4,-2,8;1,3,9]
[9,10,3;10,7,6;2,1,...
[17,21,10;19,12,1...
[-1,-7,8;-9,2,-11;-...
[1025,806,1591;5...
```

```
4) Code to access any element in the matrix: clc \alpha=randi([-55], 5, 5) \alpha(2,3) \alpha(:,1) \alpha(1,:) \alpha(1:3,1:3)
```



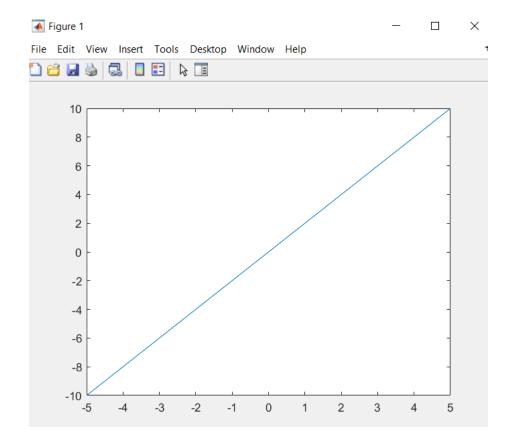
### 5) Plotting a graph:

```
clc

x=-5:5

y=2^*x

plot(x,y)
```



## 6) Plotting graphs:

clc

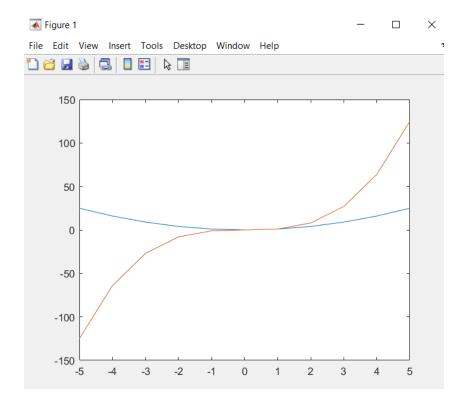
x = -5:5

 $y=x.^2$ 

 $z=x.^3$ 

plot(x,y,x,z)





## **SECOND WEEK:**

1) Identifying the limit of the function:

clc

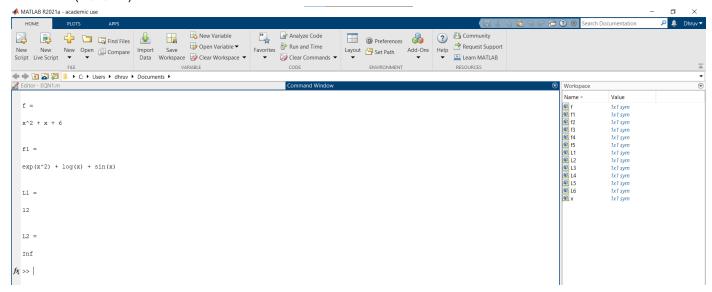
syms x

 $f = x^2 + x + 6$ 

 $fl = exp(x^2) + sin(x) + log(x)$ 

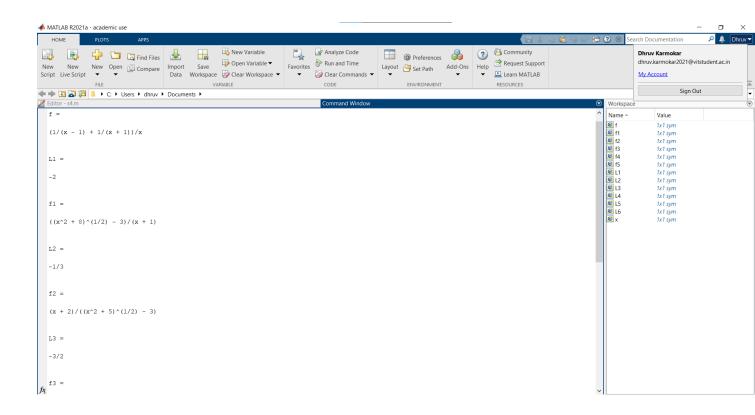
L1=limit(f,x,2)

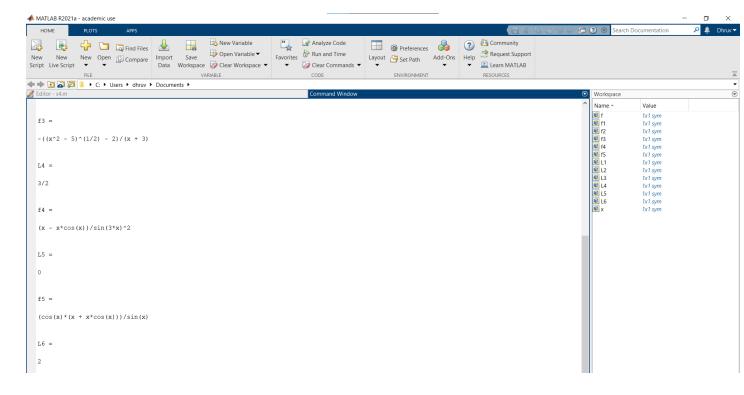
L2=limit(f1,x,inf)



# 2) Evaluating the limits in Matlab: clc syms x f = (((1/(x-1)) + (1/(x+1)))/x) L1=limit(f, x, 0) $f1 = ((sqrt(x^2+8)-3)/(x+1))$ L2=limit(f1, x, -1) $f2 = (x+2)/(sqrt(x^2+5)-3)$ L3=limit(f2, x, -2) $f3 = (2-sqrt(x^2-5))/(x+3)$ L4=limit(f3, x, -3) $f4 = (x-x^*cos(x))/sin(3^*x)^2$ L5=limit(f4, x, 0) $f5 = (x+x^*cos(x))/sin(x)^*cos(x)$

L6 = limit(f5, x, 0)





# 3) Finding derivatives using matlab:

clc sym

syms x

$$fl = (5 \times ^3 - x^4)^7$$

dl = diff(fl)

$$f2=1/(3^*x-2)$$

d2 = diff(f2)

 $f3 = \sin(x)^5$ 

d3 = diff(f3)

sl = solve(fl)

vl = subs(fl, 2)

```
f1 =
 (-x^4 + 5*x^3)^7 
d1 =
 7*(-x^4 + 5*x^3)^6*(-4*x^3 + 15*x^2) 
f2 =
 1/(3*x - 2) 
d2 =
 -3/(3*x - 2)^2
```

```
f3 =
sin(x)^5
d3 =
5*cos(x)*sin(x)^4
s1 =
v1 =
4586471424
```

```
4)Plotting Sin x and Cos x:

x = [0 : 0.01: 10];

y = sin(x);

g = cos(x);

plot(x, y, x, g, '.-'), legend( 'Sin(x)', 'Cos(x)')
```

