SCS2211-Laboratory II

Lab sheet 5

Index No :- 18001149

1. a= [3 5 7] and b= [1 2 3] are two column vectors.
   a. Get the dot product of vector a and vector b without using dot function.
   b. Get the cross product of vector a and vector b.
   c. Find the projection of a onto b.

1) A)

```
Q1a.m
1   a=[3 5 7]
2
3
4   b=[1 2 3]
5
6
7   sum(a.*b)
8
9   dot(a,b)
10
11
12
```

```
>> Q1a

a =

    3    5    7

b =

    1    2    3

ans =    34
ans =    34
```

B)

```
1   a=[3 5 7]
2
3   b=[1 2 3]
4
5   cross(a,b)
6
7
```

```
a =

    3    5    7

b =

    1    2    3

ans =

    1   -2    1
```
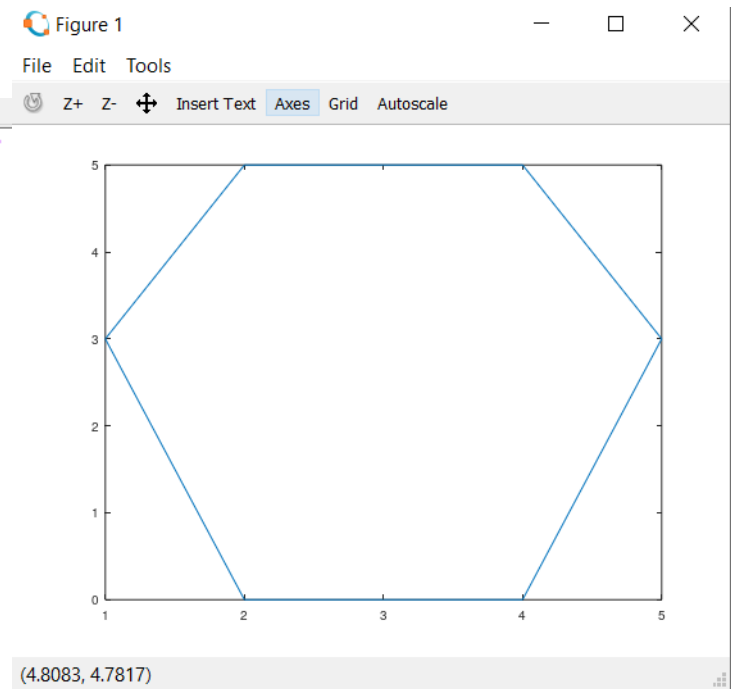
C)

```
1   a=[3 5 7]
2
3   b=[1 2 3]
4
5
6   (dot(a,b)/(norm(b))^2)*b
7
```

```
a =

    3    5    7

b =

    1    2    3

ans =

    2.4286    4.8571    7.2857
```

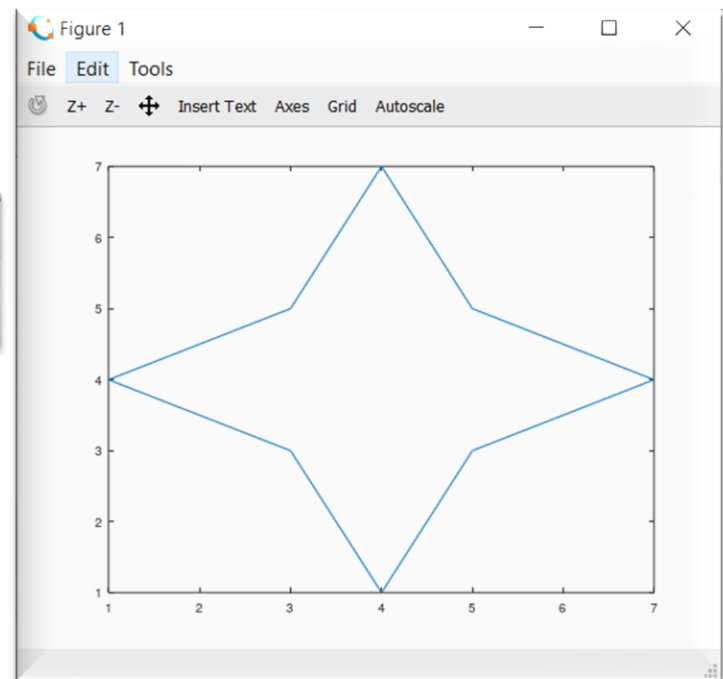## 2. Try to get following figures using your octave knowledge.

(i)

```
Q1a.m ☒    Q2Lab5.m ☒
1  M = [1 2 3 4 5 4 3 2 1; 3 5 5 5 3 0 0 0 3];
2  x=M(1,:);
3  y=M(2,:);
4  plot(x,y);
```
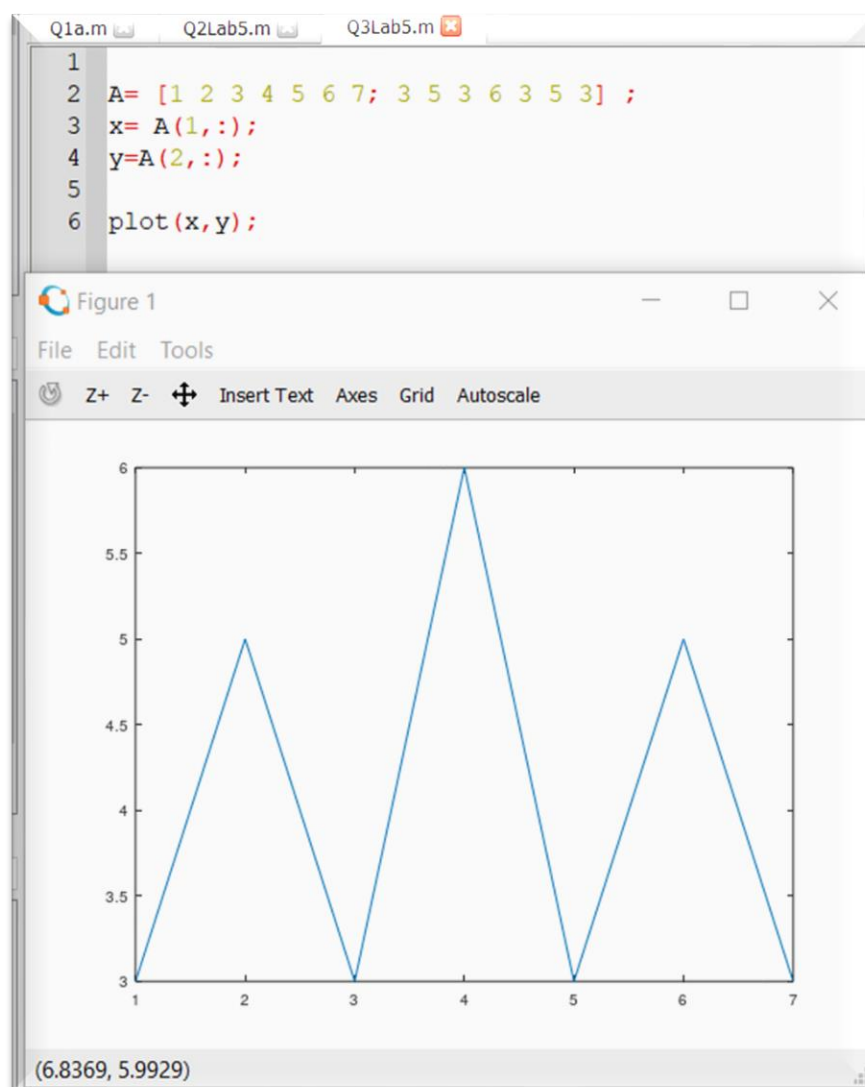

(ii)

```
1  H=[1 3 4 5 7 5 4 3 1; 4 5 7 5 4 3 1 3 4];
2  x=H(1,:);
3  y=H(2,:);
4  plot(x,y);
```
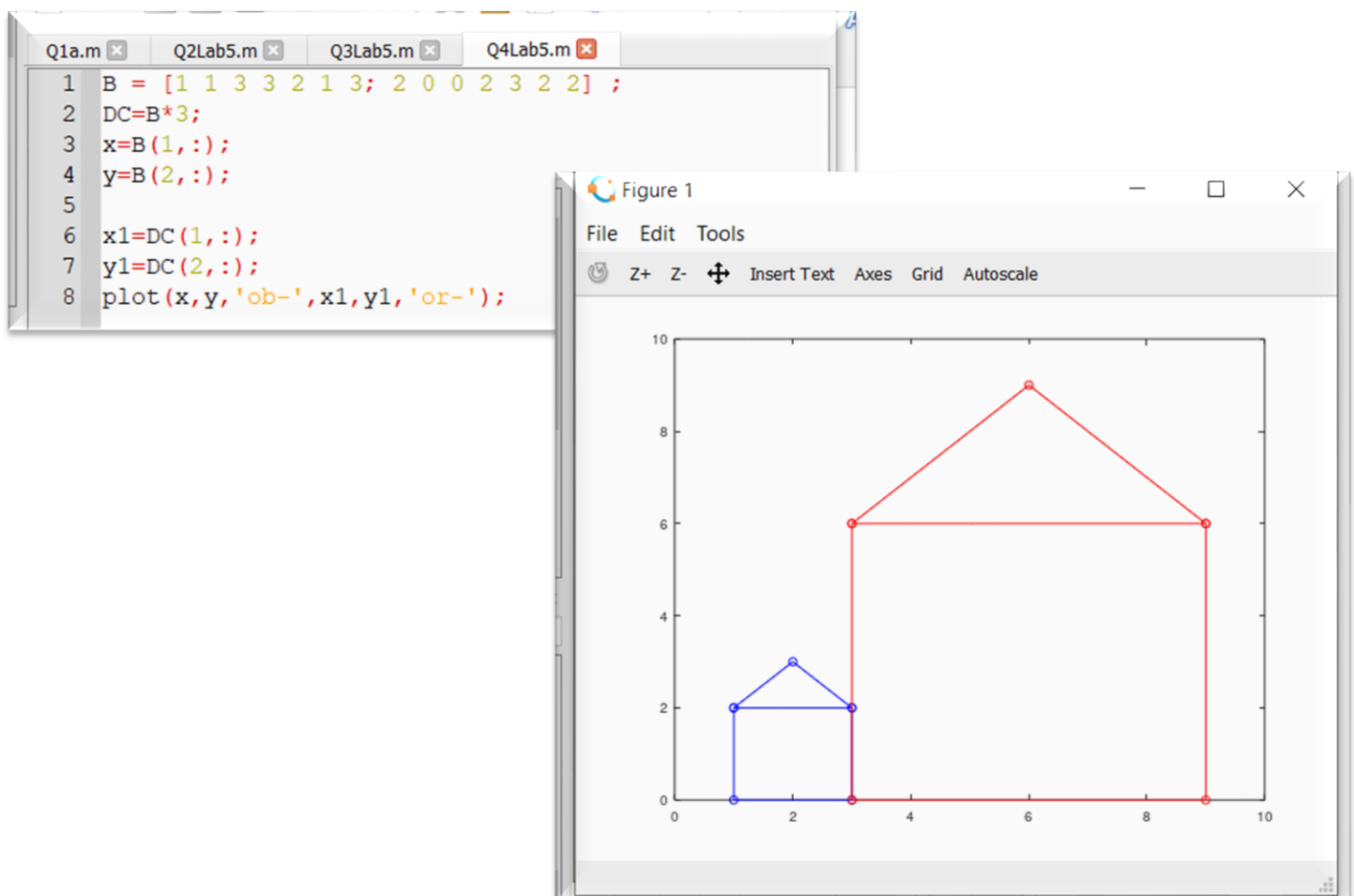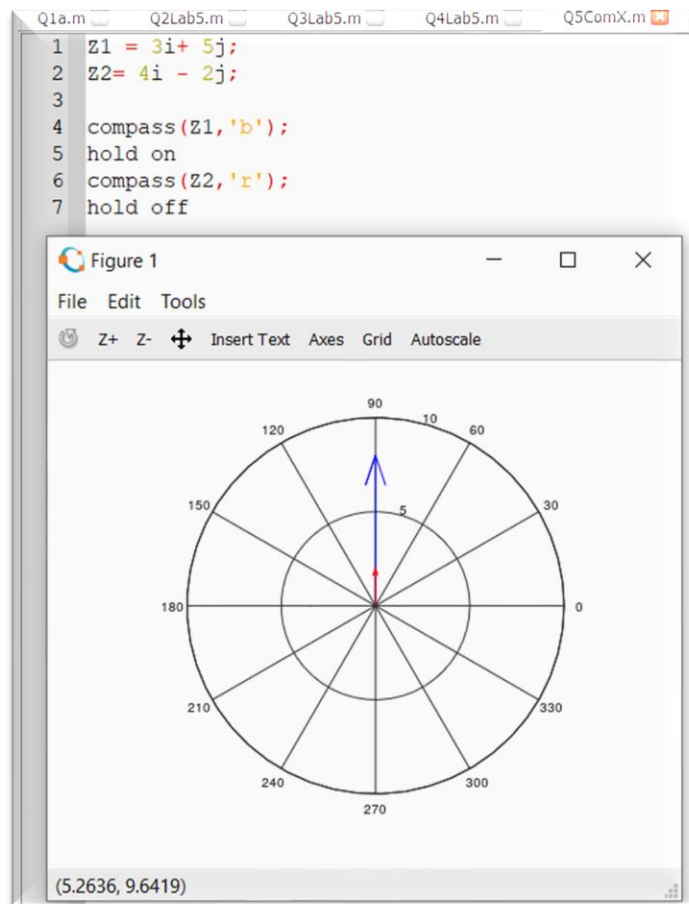

3. A= [1 2 3 4 5 6 7; 3 5 3 6 3 5 3] is matrix which can be represented as the figure. Plot the figure and plot the reflection of figure in a same plot.

```
1
2  A= [1 2 3 4 5 6 7; 3 5 3 6 3 5 3] ;
3  x= A(1,:);
4  y=A(2,:);
5
6  plot(x,y);
```

Figure 1   — ☐ ✕

File   Edit   Tools

Z+   Z-   ✛   Insert Text   Axes   Grid   Autoscale

(6.8369, 5.9929)

4. B = [1 1 3 3 2 1 3; 2 0 0 2 3 2 2] is a matrix which each column represents the point of the figure. Draw the original figure and dilated figure which expanded by factor of 3.

```
1  B = [1 1 3 3 2 1 3; 2 0 0 2 3 2 2] ;
2  DC=B*3;
3  x=B(1,:);
4  y=B(2,:);
5
6  x1=DC(1,:);
7  y1=DC(2,:);
8  plot(x,y,'ob-',x1,y1,'or-');
```

Figure 1   — ☐ ✕

File   Edit   Tools

Z+   Z-   ✛   Insert Text   Axes   Grid   Autoscale

5. Z1=3i+5j and Z2=4i-2j are two complex numbers. Plot these numbers in complex plane.

```
Q1a.m    Q2Lab5.m    Q3Lab5.m    Q4Lab5.m    Q5ComX.m
1  Z1 = 3i+ 5j;
2  Z2= 4i - 2j;
3
4  compass(Z1,'b');
5  hold on
6  compass(Z2,'r');
7  hold off
```


(5.2636, 9.6419)

6. Check if the automatically padded characters in concatenation are spaces in stringConcat = ["beautiful"; 'bird', "beautiful"]
   Yes, It's Automatically concaten padded characters

```
stringConcat=['Beautiful',' Bird', ' Beautiful']
#display(stringConcat);
```

```
>> Q7Lab5

stringConcat = Beautiful Bird Beautiful
```

7. Assign variable university with string "how are you"

```
>> Q7Lab5

university = How Are You ?
```

8. Create a program to load and save the image in octave

   a) View the image in 3D dimensional

File panel

- bat.jpg
- Lab Sheet 5.docx
- Q1a.m
- Q1a.PNG
- Q1a1.PNG
- Q1b.PNG
- Q1b1.PNG
- Q1c.PNG

Workspace

Filter ☐

Name	Class	Dimension	Value	Attr
image	uint8	256x256x3	...	

Command History

Filter ☐

```
load
load file
load File
load file
load Q8Lab5
Q8Lab5
Q8Lab5
# Octave 5.2.0, Mon Dec 07 17:31:29 2020 GMT <unknown@Pand
Q8Img
```

Q8Img.m

```octave
1   clc
2   close all
3   clear all
4   #how to Read an image
5   image = imread('bat.jpg')
6   title("Batman")
7   #how to display image
8   imshow(image);
9
10    #imwrite(image,'const.jpg');
```

Figure 1

File   Edit   Tools

Z+ Z- ✛ Insert Text   Axes   Grid   Autoscale

(16.327, 178.17)