



NAVI MUMBAI

MATLAB

Unit 4-Lecture 13

BTech (CSBS) -Semester VII

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Basic plotting

- Overview,
- axis labels, and annotations,
- creating simple plots,
- specifying line styles and colours
- adding titles,
- multiple data sets in one plot,



Questions

Let's say that you want to plot these two equations in the same window:

$$y1 = \cos(x)$$

$$y2 = x^2 - 1$$



Steps for 2D Plots

1. Define your interval of interest, think of highest and lowest values, and a step.
2. Define your function $y = f(x)$. Take into account that you're working with arrays, not with scalars, use dot operators.
3. Use appropriate 2D built-in functions.



1. Define your Interval

Think:

- What values for x do I want to take into account? What steps in the array should I consider?



2. Define your Function(s)

Think of lower and upper values, and steps

```
x = -1 : 0.1 : 1.5;
```

```
y1 = cos(x);
```

```
y2 = x.^2 - 1;
```

Now, x, y1 and y2 are vectors with appropriate values.



3. Use 2D built-in Functions

You can use functions such as:

plot

stem

polar, compass, rose

loglog, semilogx, semilogy

area, fill

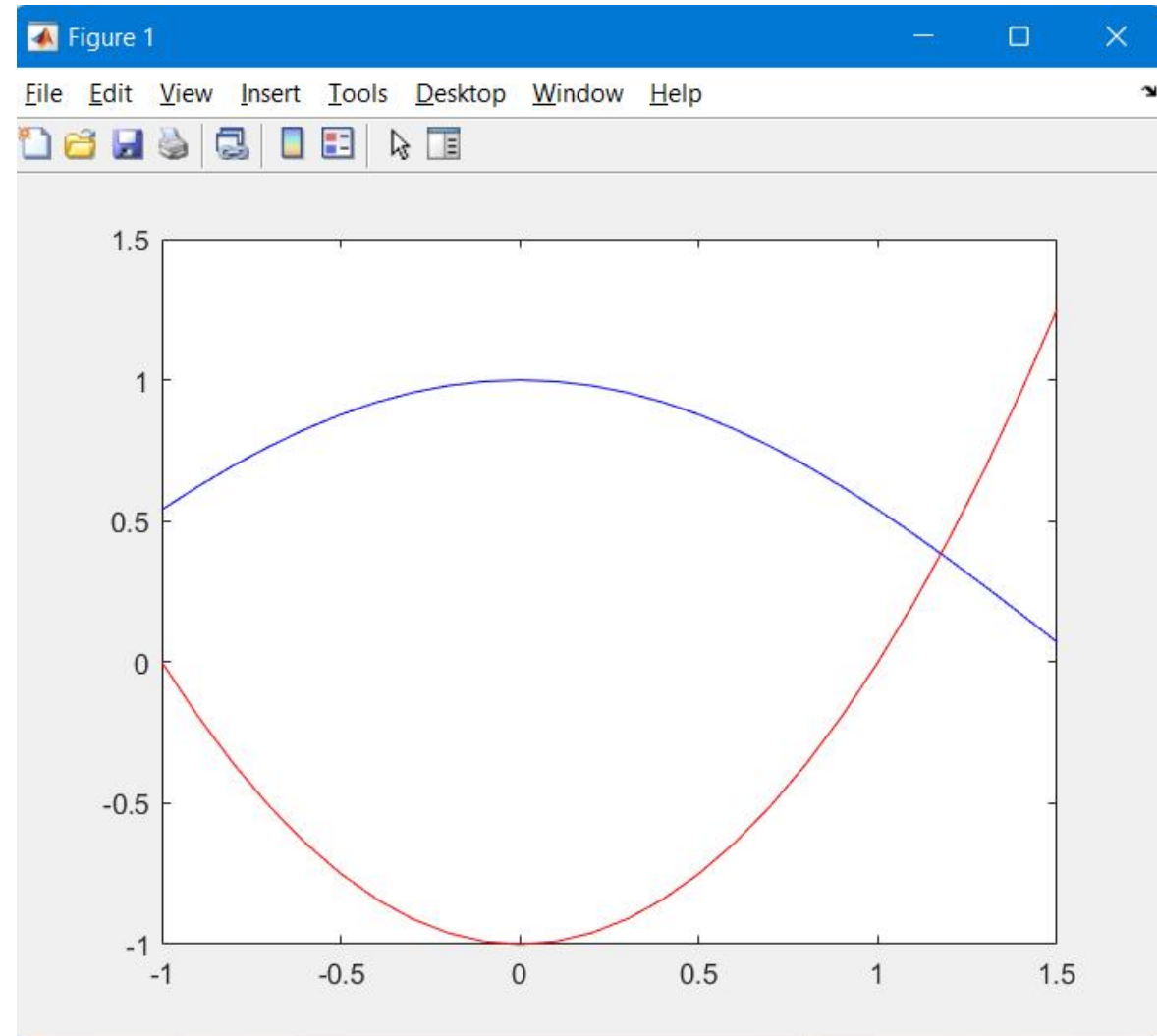
pie

hist, stairs



Solution

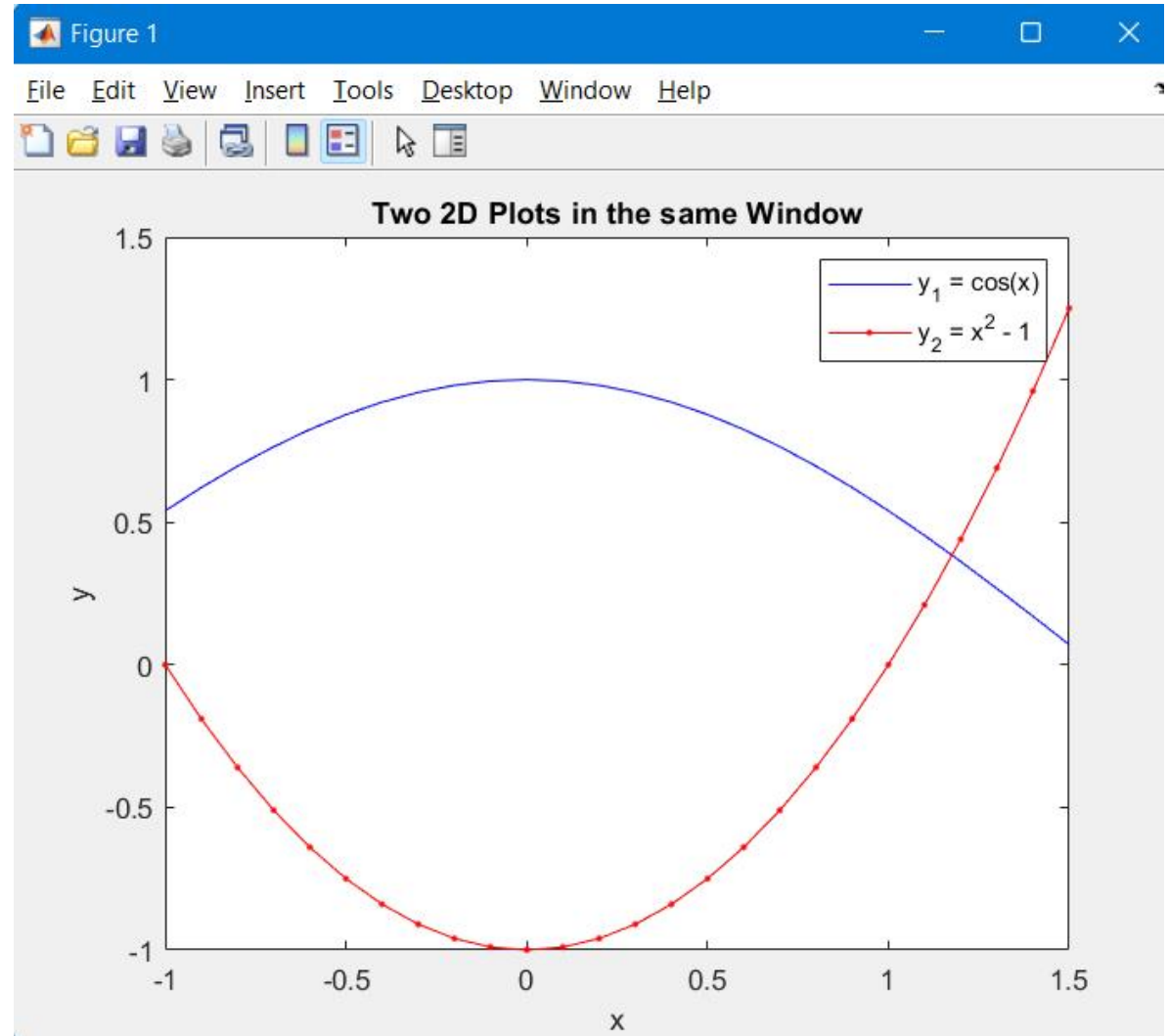
```
lab6.m  x  +  
1  x = -1 : 0.1 : 1.5;  
2  y1 = cos(x);  
3  y2 = x.^2 - 1;  
4  plot(x, y1, 'b', x, y2, 'r')
```





Solution

```
6 x = -1 : 0.1 : 1.5;
7 y1 = cos(x);
8 y2 = x.^2 - 1;
9 plot(x, y1, 'b', x, y2, 'r.-')
10 title('Two 2D Plots in the same Window')
11 legend('y_1 = cos(x)', 'y_2 = x^2 - 1')
12 xlabel('x')
13 ylabel('y')
```





Solution

```
15 t = 0 : .3 : 2*pi;  
16 f = exp(-t/4) .* cos(t);  
17 stem(t, f)  
18 title('2D Plot using Stem')  
19 legend('f(t) = e^{-t/4} cos(t)')  
20 xlabel('t')  
21 ylabel('f(t)')  
22
```

