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MATLAB
Unit 4-Lecture 13

BTech (CSBS) -Semester VII

30 August 2022, 09:35AM

*few figures/content have been prepared/referred from internet source/books

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 intoaccount? 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

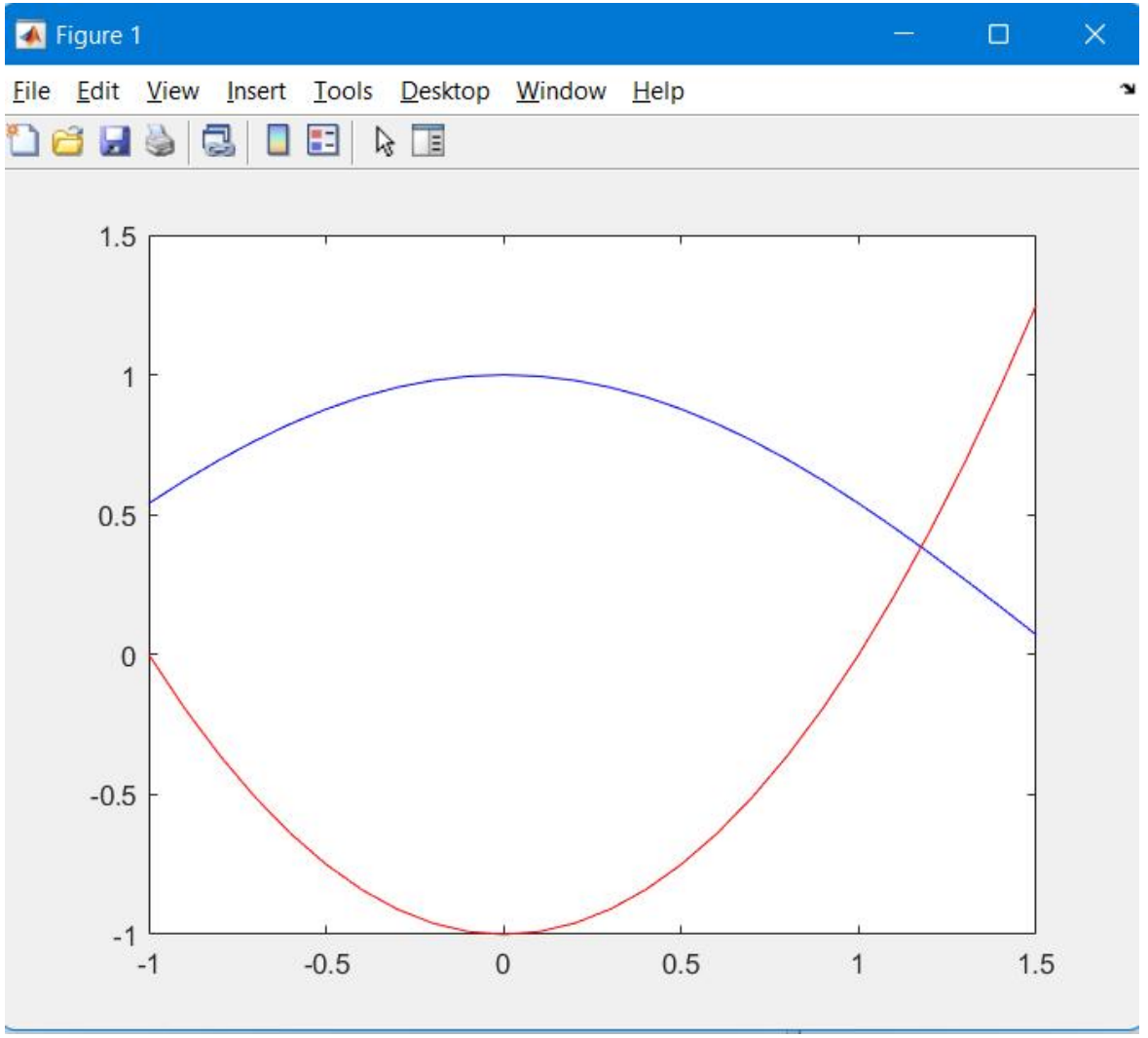
pie

hist, stairs

Solution

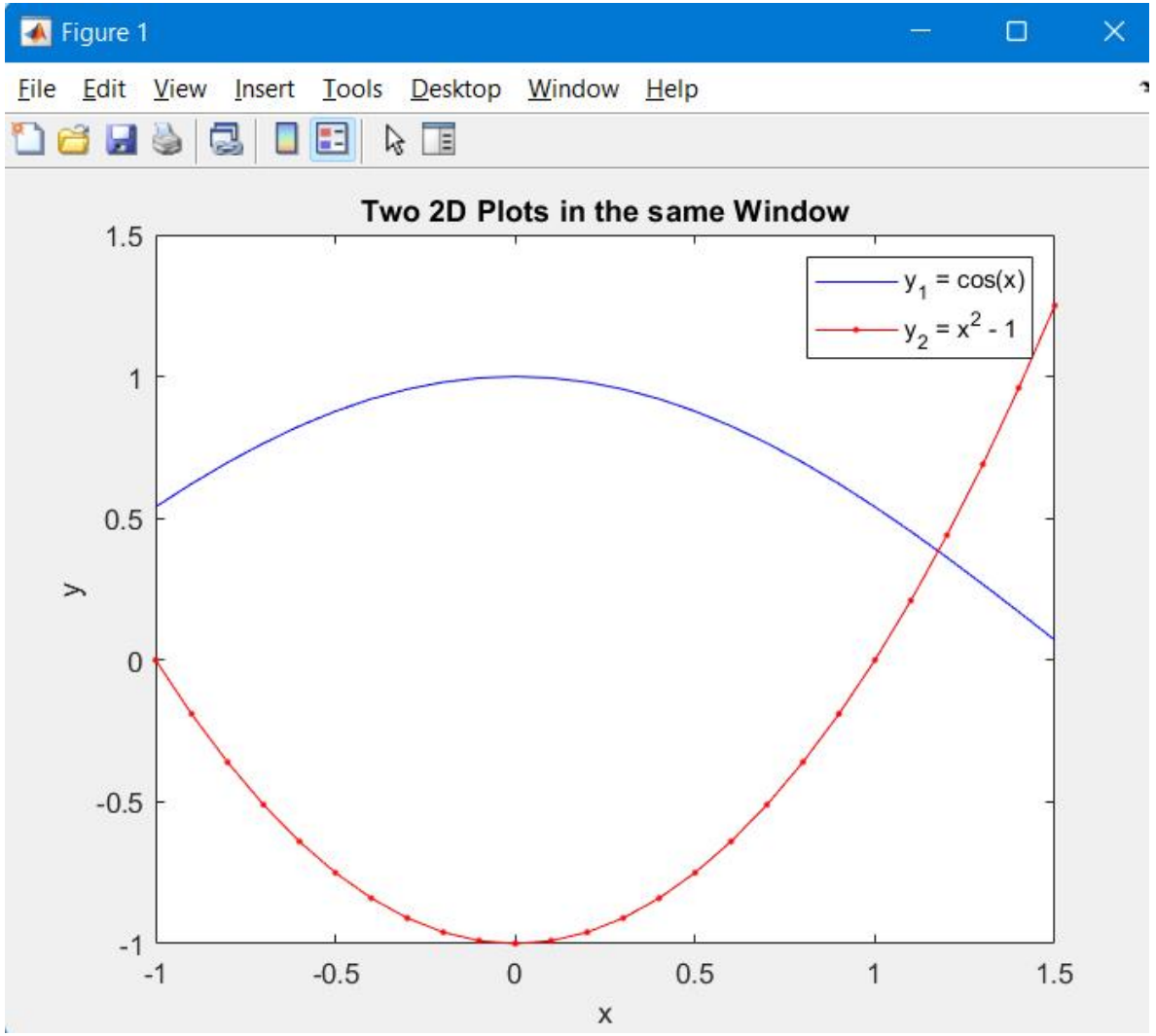
lab6.m

```
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
```