

MATLAB

Lecturer : Dr. Rafel Hekmat Hameed

University of Babylon

Subject : MATLAB

College of Engineering

Year : Second B.Sc.

Mechanical Engineering Dep.

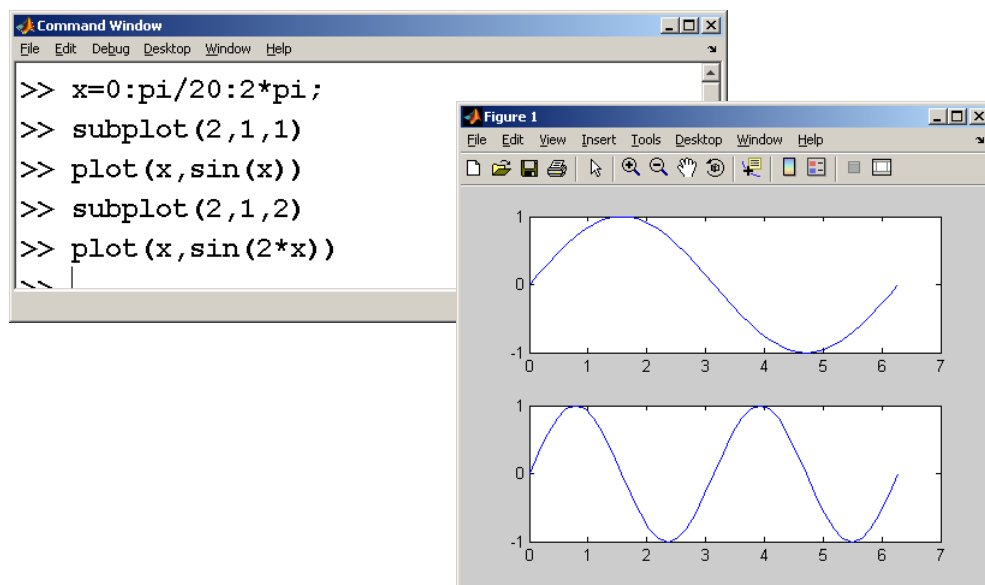
PLOT

Subplots

The subplot command allows you to subdivide the graphing window into a grid of **m** rows and **n** columns

subplot(m,n,p)

m: row ; n: column ; p: location

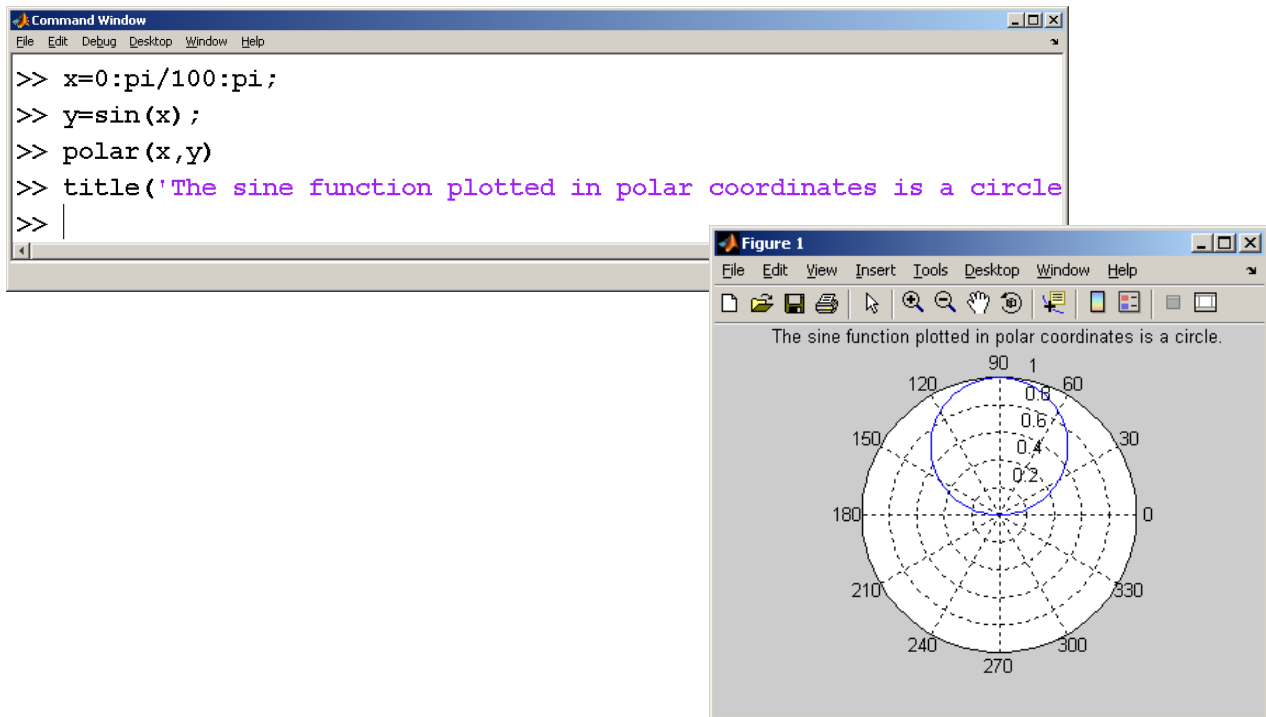


Polar Plots

- Some functions are easier to specify using polar coordinates than by using rectangular coordinates
- For example the equation of a circle is

$$y = \sin(x)$$

in polar coordinates



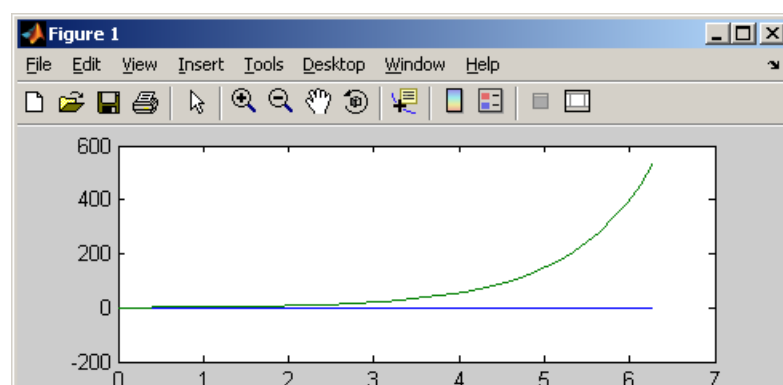
X-Y Graphs with Two Y Axes

- Sometimes it is useful to overlay two x-y plots onto the same figure. However, if the order of magnitude of the y values are quite different, it may be difficult to see how the data behave.

For example

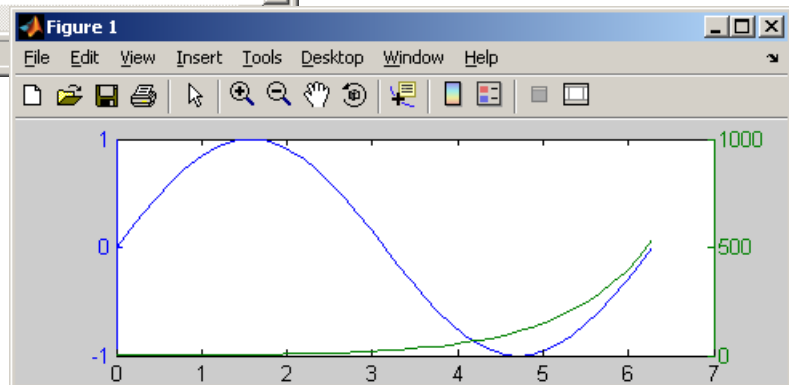
```
1 x=0:pi/20:2*pi;
2 y1=sin(x);
3 y2=exp(x);
4 plot(x,y1,x,y2)
5
```

Scaling Depends on the largest value plotted. Its difficult to see how the blue line behaves, because the scale isn't appropriate



```
Editor - Untitled2*
File Edit Text Cell Tools Debug Desktop Window Help
1 x=0:pi/20:2*pi;
2 y1=sin(x);
3 y2=exp(x);
4 plotyy(x,y1,x,y2)
5
```

The **plotyy** function allows you to use two scales on a single graph



THREE DIMENSIONAL PLOTTING

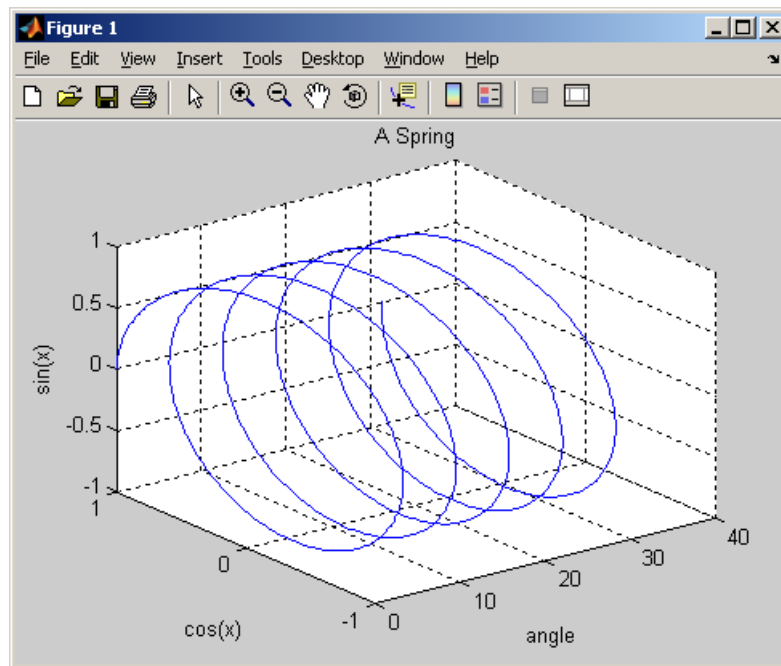
- *Line plots*
- *Surface plots*
- *Contour plots*

+ Three Dimensional Line Plots

These plots require a set of order triples (x-y-z values) as input

```
Editor - Untitled2*
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1 x = linspace(0,10*pi,1000);
2 y = cos(x);
3 z = sin(x);
4 plot3(x,y,z)
5 grid
6 xlabel('angle'), ylabel('cos(x)')
7 zlabel('sin(x)'), title('A Spring')
8
```

The z-axis is labeled the same way the x and y axes are labeled



Saving Figures

- Figures created in MATLAB can be stored using a number of different file formats
 - File → Save As
 - Edit → Copy