

### Add Axis Labels

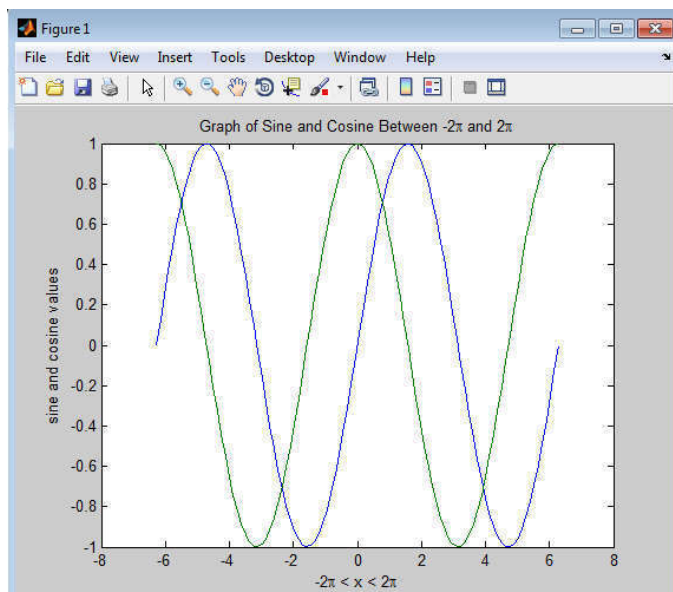
Add axis labels to the graph using the xlabel and ylabel functions. Pass these functions a text string with the desired label.

```
xlabel('string')
```

```
ylabel('string')
```

#### Example:

```
>> x = linspace(-2*pi,2*pi,100);  
  
>> y1 = sin(x);  
  
>> y2 = cos(x);  
  
>> plot(x,y1,x,y2);  
  
>> title('Graph of Sine and Cosine Between -2\pi and 2\pi')  
  
>> xlabel('-2\pi < x < 2\pi')  
  
>> ylabel('sine and cosine values')
```



### Add Legend

Add a legend to the graph identifying each data set using the legend function. Pass the legend function a text string description for each line. Specify legend descriptions in the order that you plot the lines.

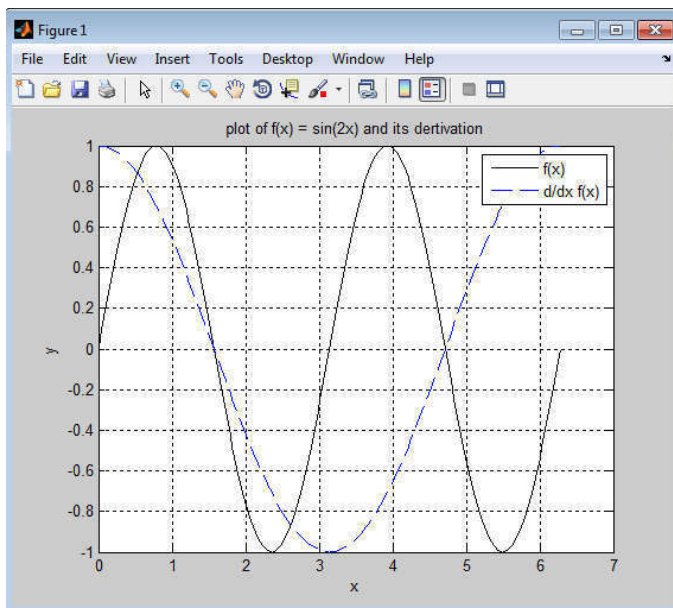
Legends can be created with the legend function. The basic form of this function is:

```
Legend('string1','string2',.....,pos)
```

Where string1, string2, and so forth, are labels associated with the lines plotted, and pos is an integer specifying where to place the legend. The possible values of pos are given in table below. the command

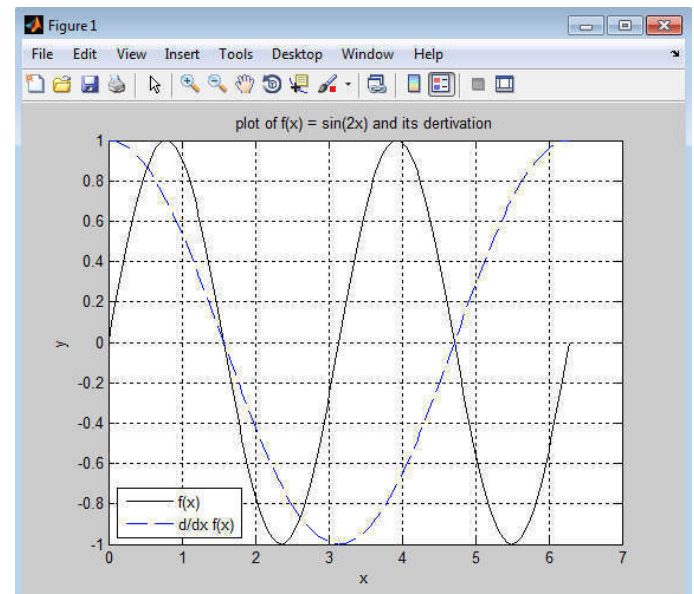
#### Example:

```
>> x=0:pi/100:2*pi;  
>> y1=sin(2*x);  
>> y2=cos(x);  
>> plot(x,y1,'k-',x,y2,'b--');  
>> title('plot of f(x) = sin(2x) and its derivation');  
>> xlabel('x');  
>> ylabel('y');  
>> legend('f(x)','d/dx f(x)');  
>> grid on
```



#### Example:

```
>> legend('f(x)','d/dx f(x)',3);
```



#### Example:

```
>> legend('f(x)','d/dx f(x)',2);
```

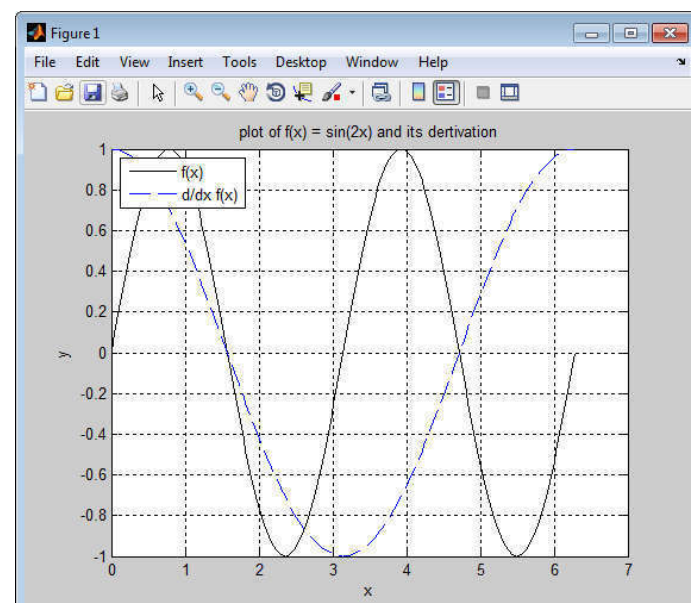
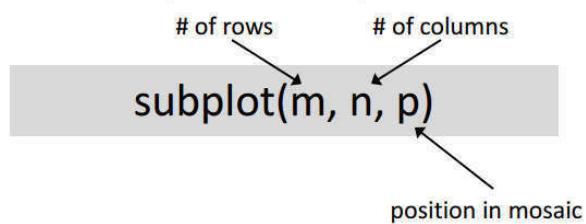


Table values of **ops** in the **legend** command

Value	Meaning
0	Automatic “best” placement(least conflict with data)
1	Upper Right-hand corner.
2	Upper left-hand corner.
3	Lower left_hand corner.
4	Lower left_hand corner.
-1	To right of the plot.

## Subplots

The MATLAB subplot creates a tiling or mosaic of axes

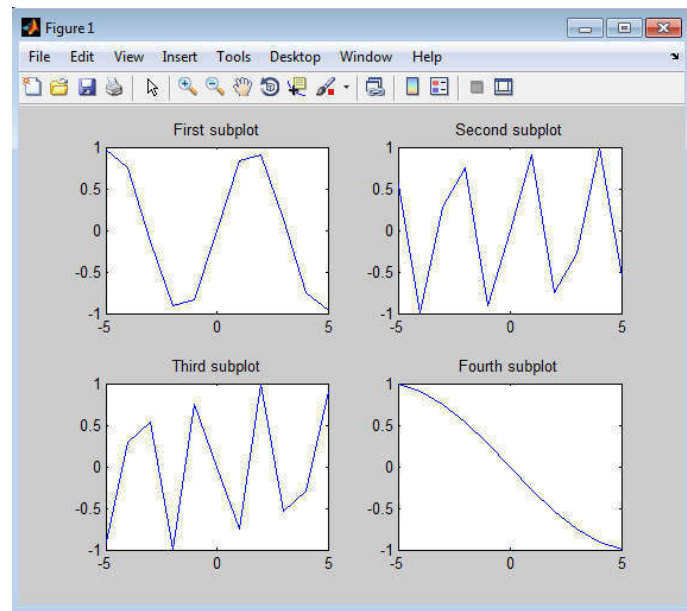


This example shows how to create a figure containing multiple axes using the subplot function. The syntax, `subplot(m,n,p)`, divides the figure into an m-by-n grid with an axes in the pth grid location. The grids are numbered along each row.

### Example :Create Subplots and Add Subplot Titles

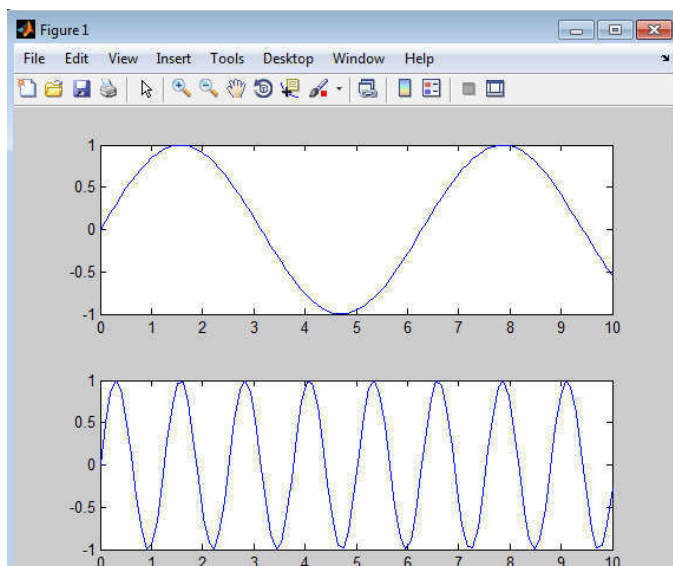
use subplot to create a figure containing a 2-by-2 grid of graphs. Plot a sine wave in the first subplot. Then, plot three more sine waves in the second, third, and fourth subplots.

```
>> x = -5:5;  
>> y1 = sin(x);  
>> subplot(2,2,1)  
>> plot(x,y1)  
>> title('First subplot')  
>> y2 = sin(2*x);  
>> subplot(2,2,2)  
>> plot(x,y2)  
>> title('Second subplot')  
>> y3 = sin(4*x);  
>> subplot(2,2,3)  
>> plot(x,y3)  
>> title('Third subplot')  
>> y4 = sin(6*x);  
>> subplot(2,2,4)  
>> plot(x,y4)
```



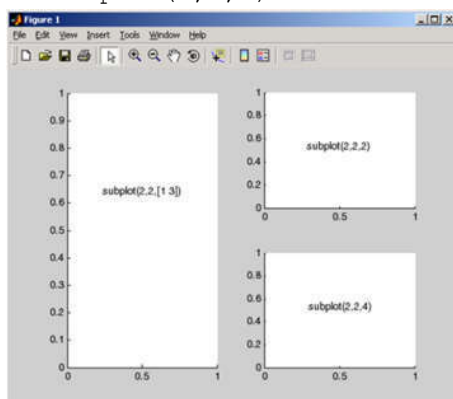
### Example2

```
>> x = linspace(0,10);  
>> y1 = sin(x);  
>> y2 = sin(5*x);  
>> subplot(2,1,1);  
>> plot(x,y1)  
>> subplot(2,1,2);  
>> plot(x,y2)
```



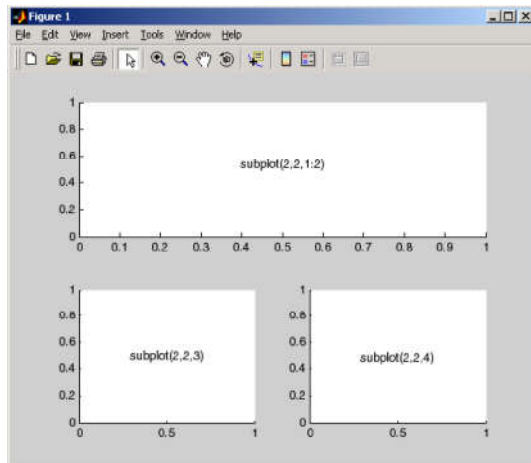
**Note:** The following combinations produce asymmetrical arrangements of subplots.

```
subplot(2,2,[1 3])  
subplot(2,2,2)  
subplot(2,2,4)
```



You can also use the colon operator to specify multiple locations if they are in sequence.

```
subplot(2,2,1:2)
subplot(2,2,3)
subplot(2,2,4)
```



### Change Axis Limits of Graph

MATLAB selects axis limits based on the range of the plotted data. You can specify the limits manually using the axis command. Call axis with the new limits defined as a four-element vector.

```
axis([xmin,xmax,ymin,ymax])
```

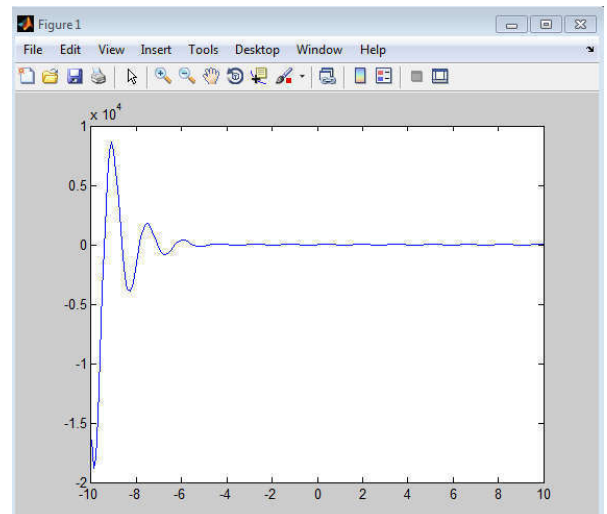
Note that the minimum values must be less than the maximum values.

This example shows how to change the axis limits of a graph. By default, MATLAB chooses axis limits to encompass the data plotted.

#### Example:

Create Simple Line Plot

```
>> x = linspace(-10,10,200);
>> y = sin(4*x)./exp(x);
>> plot(x,y)
```

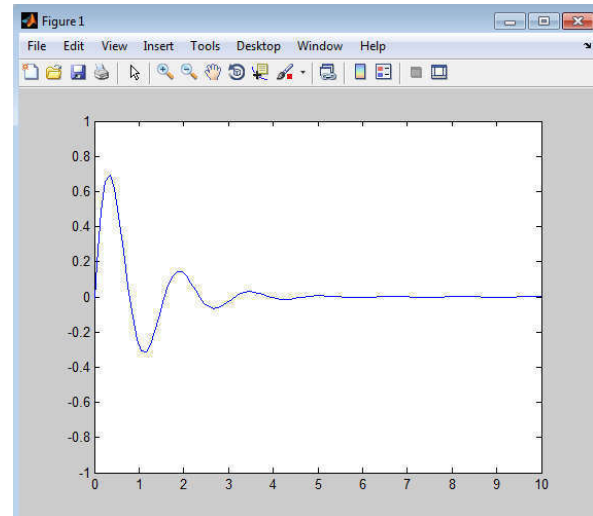


```
>> x = linspace(-10,10,200);
```

```
>> y = sin(4*x)./exp(x);
```

```
>> plot(x,y)
```

```
>> axis([0,10,-1,1])
```



```
>> x = linspace(-10,10,200);
```

```
>> y = sin(4*x)./exp(x);
```

```
>> plot(x,y)
```

```
>> axis([-inf,10,-1,1])
```

