Plotting Functions

يوجد في برنامج MATLAB وسائل لرسم المتجهات والمصفوفات والدوال الاخرى وتمثيلها بشكل رسم بياني

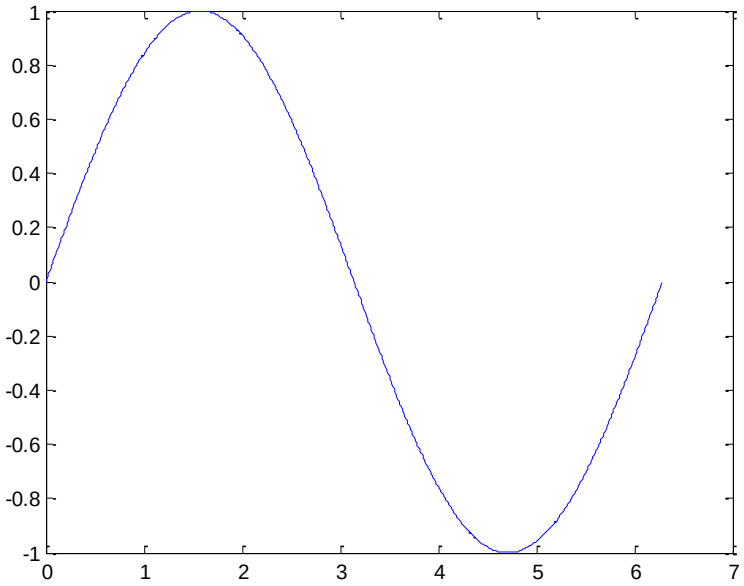
Example 1

Write MATLAB program to plot the function

$y = \sin(x)$where $0 \leq x \leq 2\pi$

Solution

```
x=0:0.01:2*pi;
y=sin(x);
plot(x,y)
```



Example 2

Write MATLAB program to plot the function

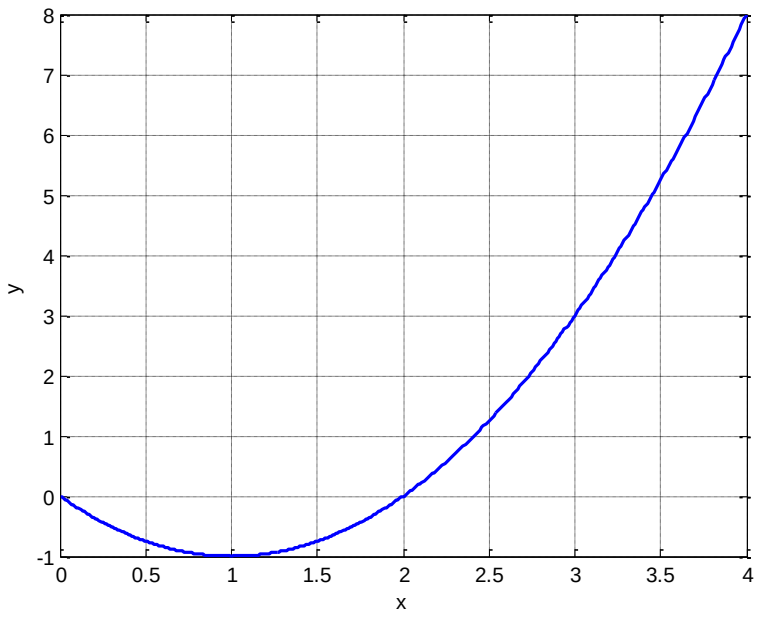
$y = x^2 - 2x$ **where** $0 \leq x \leq 4$

Add grid, x-label, y-label

with line-width=2

Solution

```
x=0:0.01:4;
y=x.^2-2*x;
plot(x,y,'LineWidth',2),grid on , xlabel('x'),ylabel('y')
```



Example 3

Write MATLAB program to plot the function

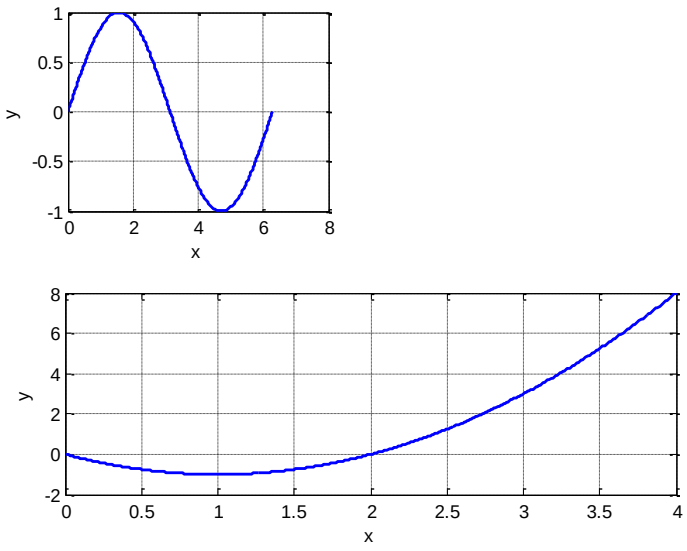
$$y_1 = \sin(x_1) \text{where } 0 \leq x_1 \leq 2\pi$$

And $y_2 = x_2^2 - 2x_2$ where $0 \leq x_2 \leq 4$

With Line-Width=2 Add grid, x-label, y-label with line-width=2

Solution

```
x1=0:0.01:2*pi;
y1=sin(x1);
x2=0:0.01:4;
y2=x2.^2-2*x2;
subplot(2,2,1),plot(x1,y1,'LineWidth',2),grid on,xlabel('x'),ylabel('y')
subplot(2,2,3:4),plot(x2,y2,'LineWidth',2),grid on,xlabel('x'),ylabel('y')
```



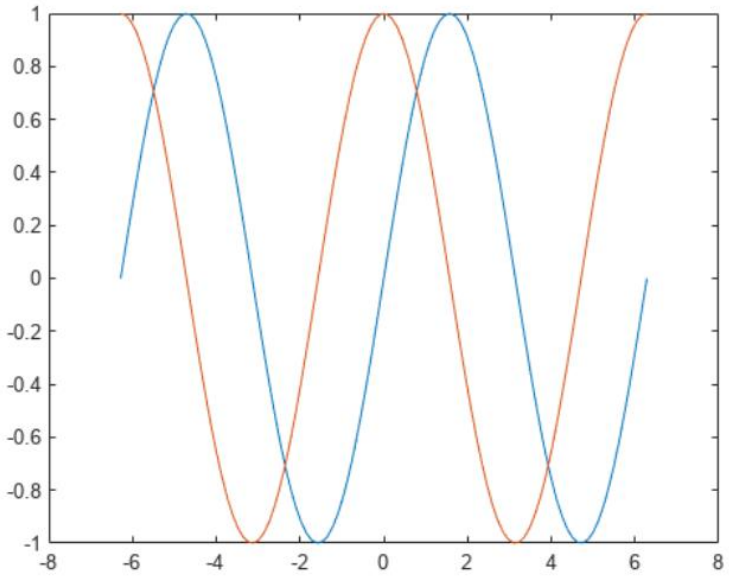
Example 4

Define `x` as 100 linearly spaced values between -2π and 2π. Define `y1` and `y2` as sine and cosine values of `x`.

Create a line plot of both sets of data.

Solution

```
x = linspace(-2*pi,2*pi);
y1 = sin(x);
y2 = cos(x);
figure
plot(x,y1,x,y2)
```



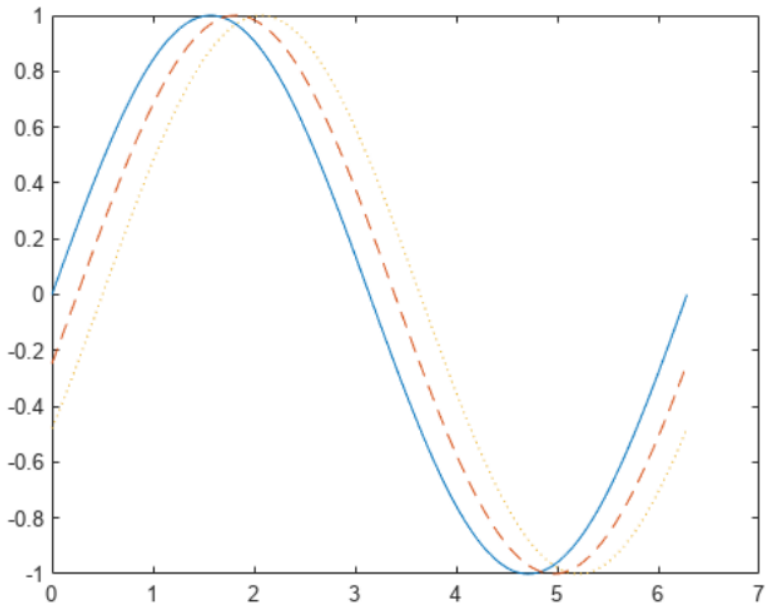
Example 5

Plot three sine curves with a small phase shift between each line. Use the default line style for the first line. Specify a dashed line style for the second line and a dotted line style for the third line.

Solution

```
x = 0:pi/100:2*pi;
y1 = sin(x);
y2 = sin(x-0.25);
y3 = sin(x-0.5);

figure
plot(x,y1,x,y2,'--',x,y3,':')
```

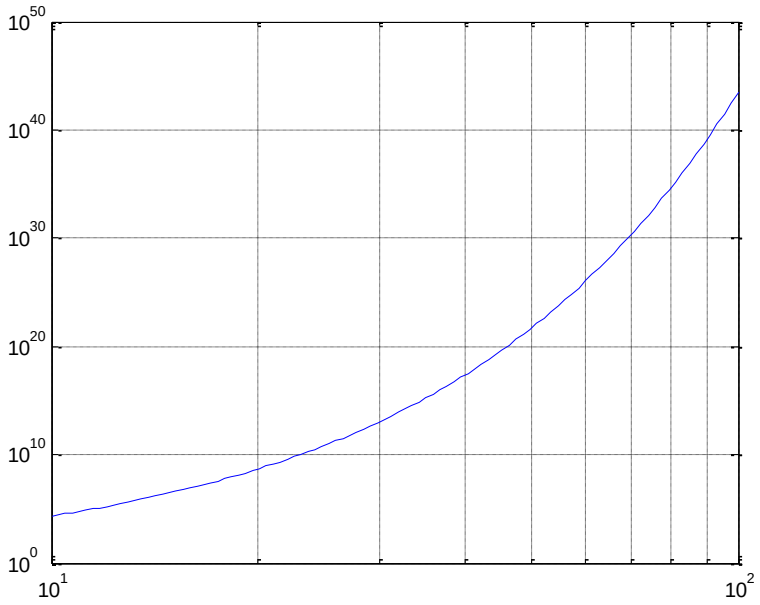


Example 6

Using loglog draw 100 point

Solution

```
x=logspace(1,2,100);
y=exp(x);
loglog(x,y)
grid on
```



Example 7

Using semilog draw if x(0) = 1 to 10

$$Y = 10^X$$

Solution

```
x= 0:1:10;
y=10.^x;
semilogy(x,y)
grid on
```