Plot in Matlab

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Introduction

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  1. Matrix manipulations;
  2. Plotting of functions and data;
  3. Implementation of algorithms;
  4. Creation of user interfaces;
  5. Interfacing with programs written in other languages, *e.g.*, C, C++, Java, Fortran and Python.

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- A free alternative: Scilab (http://www.scilab.org/).

Define a Matrix or Vector

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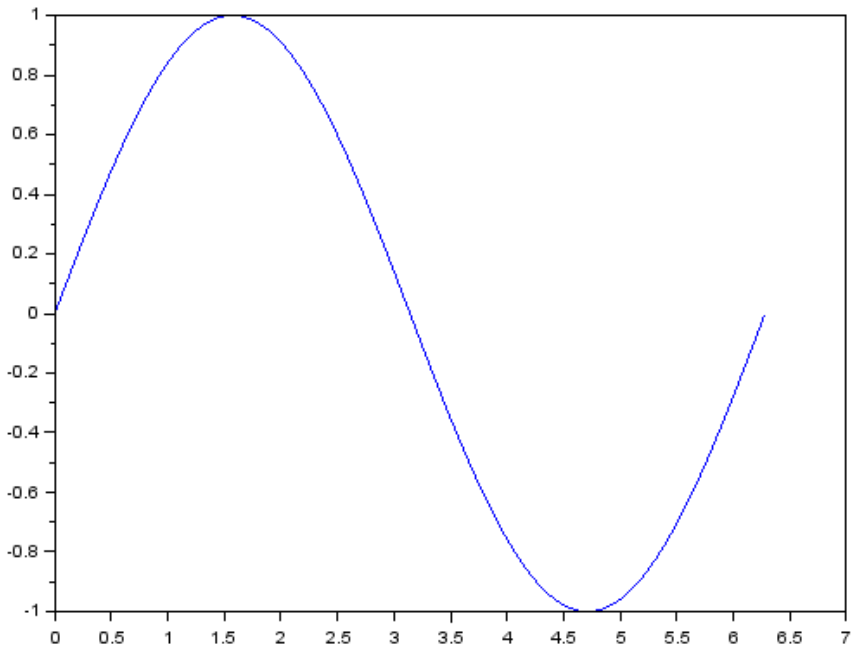
- a = [1 2; 3 4];
- b = sin(a): the matrix $\begin{bmatrix} \sin(1) & \sin(2) \\ \sin(3) & \sin(4) \end{bmatrix}$;
- c = 0: pi/10 : 2 * pi: a vector consists of the numbers from 0 to 2π with the step $\frac{\pi}{10}$.
- d = sin(c): a vector with each $d_i = \sin(c_i)$ where c_i is an element of c.

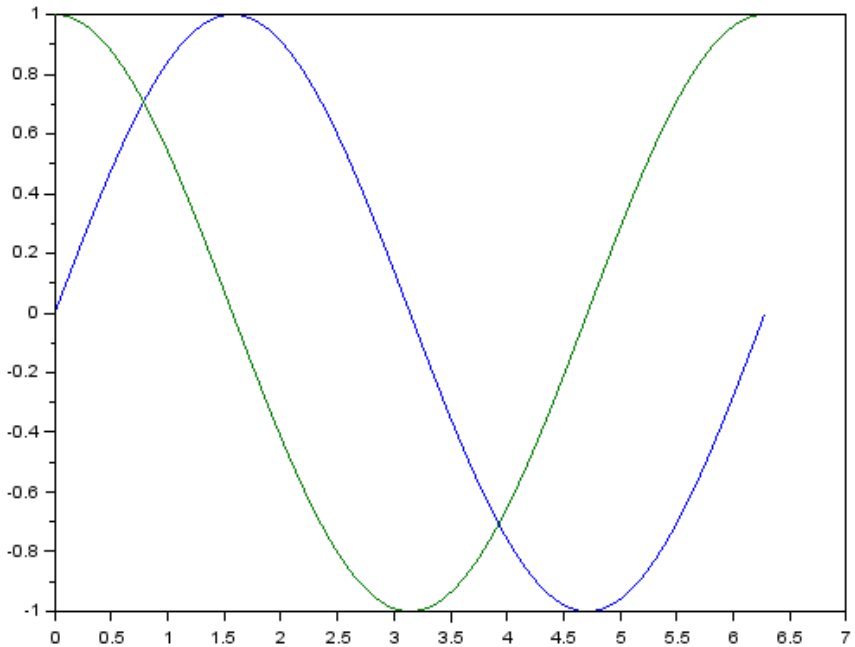
Plot a Simple Line

- plot(c, d): a figure showing that the sine function with the domain $[0, 2\pi]$.



Plot Multiple Lines

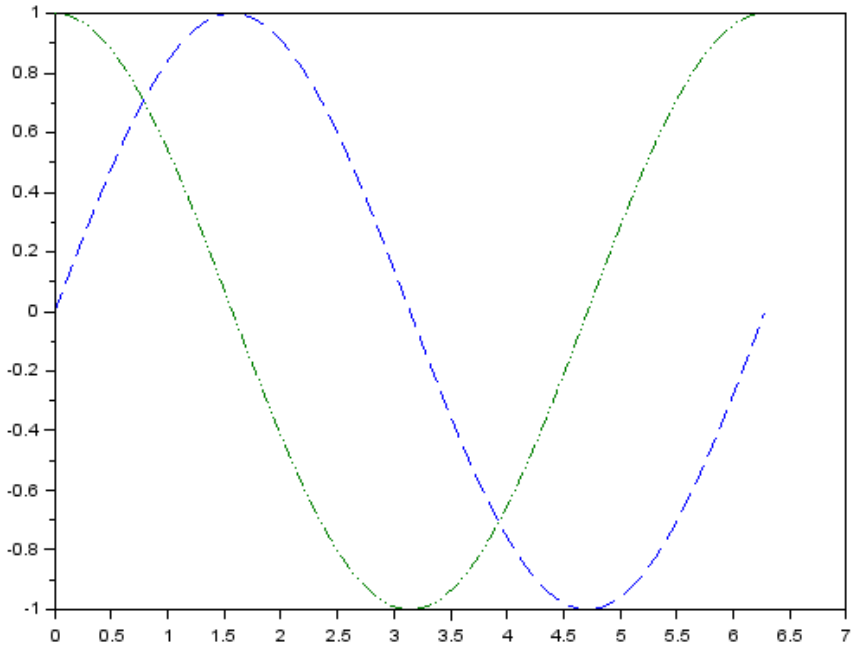
- e = cos(c): a vector with each $e_i = \cos(c_i)$ where c_i is an element of c.
- plot(c, d, c, e): a figure showing that the sine and cosine functions with the domain $[0, 2\pi]$.



Specify Line Style

Line Styple	Description
-	Solid line (default)
- -	Dashed line
:	Dotted line
-.	Dash-dot line

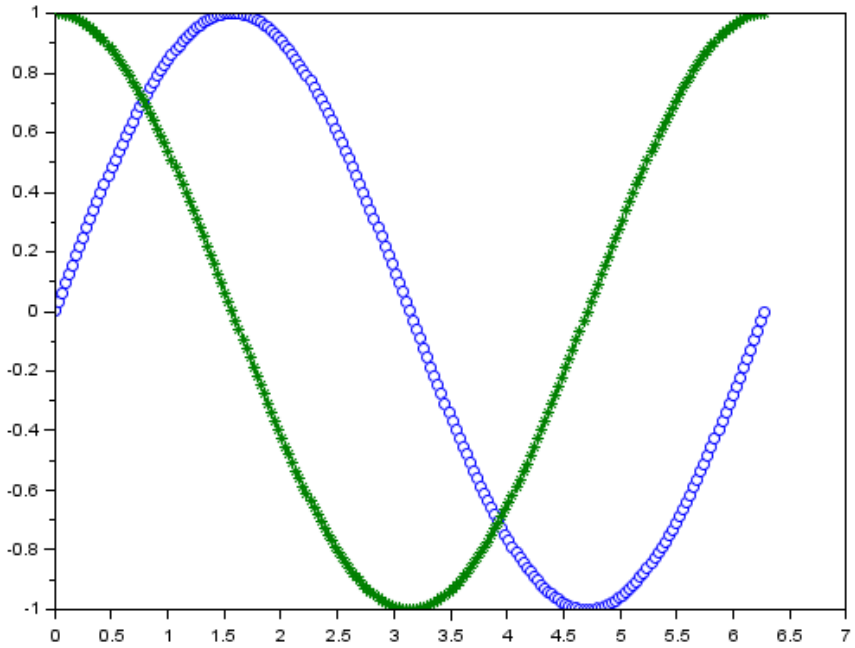
- plot(c, d, "- -", c, e, ":").



Specify Point Style

Marker	Description
o	Circle
+	Plus sign
*	Asterisk
.	Point

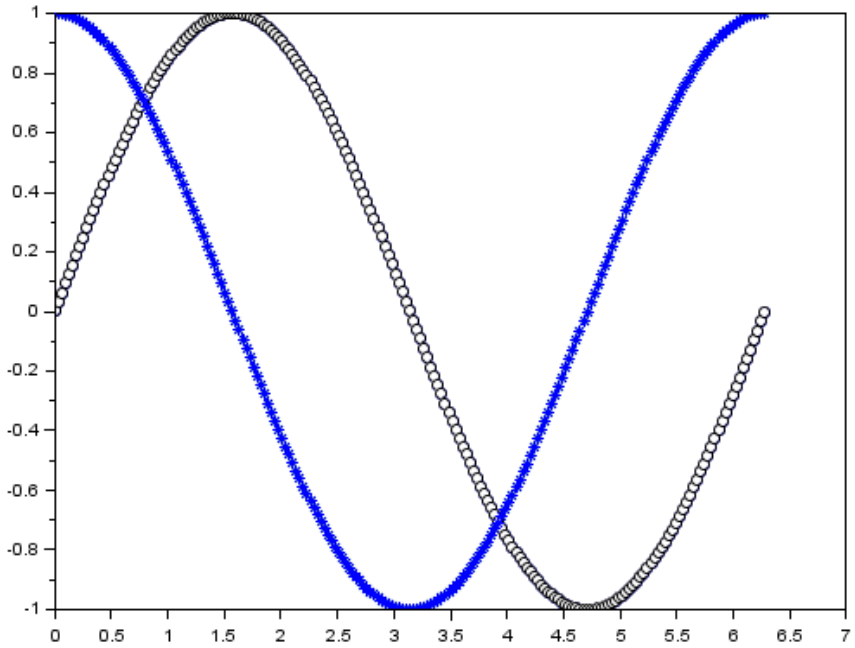
- plot(c, d. “- -o”. c. e. “:*”).



Specify Color

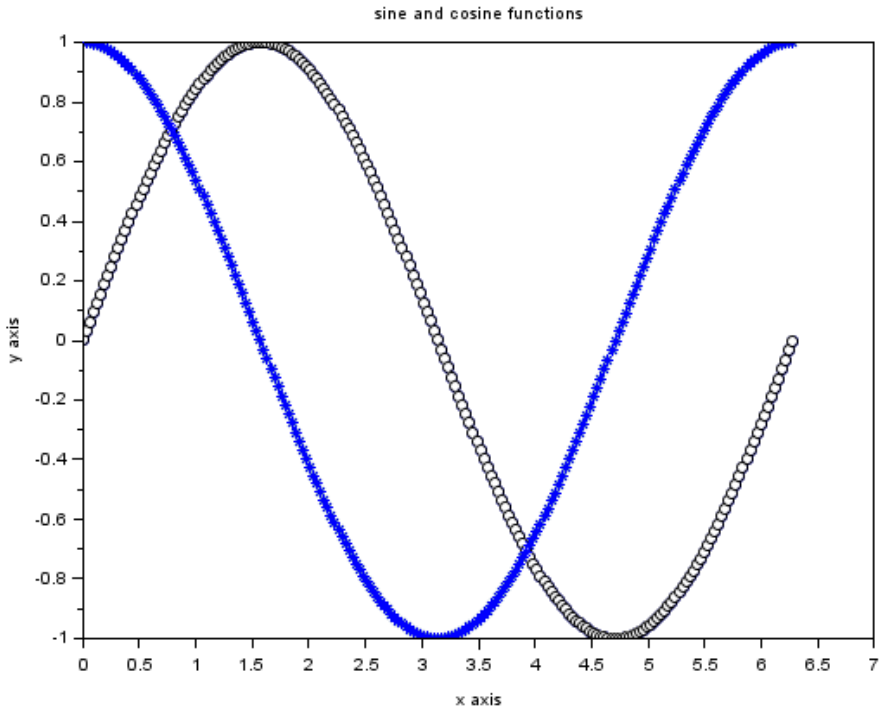
Marker	Description
m	magenta
r	red
b	blue
k	black

- plot(c, d, "- -ok", c, e, ":*b").



Add Title and Axis Labels

- title('sine and cosine functions');
- xlabel('x axis');
- ylabel('y axis').



More informations

- plot: http://cn.mathworks.com/help/matlab/ref/plot.html
- title: http://cn.mathworks.com/help/matlab/ref/title.html
- xlabel: http://cn.mathworks.com/help/matlab/ref/xlabel.html

Thank you!