Axis Control	
axes	Create axes in arbitrary positions
axis	Control axis scaling and appearance
box	Display axis border
grid	Control grid lines
hold	Hold current graph
rotate3d	Interactively rotate view of 3-D plot
subplot	Create axes in tiled positions
view	Set three-dimensional graph viewpoint specifications
zoom	Zoom in and out on 2-D plot

Lighting	
diffuse	Reflectance for a surface
lighting	Lighting mode
material	Material reflectance mode
specular	Specular reflectance
surfl	Three-dimensional shaded surface with lighting
surfnorm	Surface normals

Type `helpbrowser` to find more information on available Handle Graphics® properties.

File Input/Output	
dlmread dlmwrite	Read/write ASCII delimited file
fopen	Open generic text or binary file
fprintf	Write to generic text file
fread	Read generic binary file
fscanf	Read generic text file
fwrite	Write to generic binary file
importdata	Load data from file
imread imwrite	Read/write image
load	Load MAT-file
save	Save variables to MAT-file
textread	Read formatted data from text file
uiimport	Open Import Wizard to load data
wavread wavwrite	Read/write Microsoft WAV-file
wk1read wk1write	Read/write spreadsheet file
xlsread	Read data from Microsoft Excel file
fgetl	Read line from file, discard return

Programming	
eval	Evaluate string as MATLAB expression
function	Keyword to create function M-file, e.g., `function[out1,out2]=mfilename(in1,in2)`
nargin nargout	Number of input/output arguments to M-file
pcode	Create pseudocode of M-file
profile viewer	Create profile report of your M-file's performance
varargin varargout	Variable number of input/output arguments
F10	Step through debugging

Sample Function M-File

mystats.m

```
function [mean,size] = mystats(x)
% Comments: This is the M-file help.
% Type this test in an editor; save
% as mystats.m.
% Typing help mystats displays these
% comments.
% From the MATLAB command line, call
% this function as
% [mn,data_size] = mystats([1 2 3])
% Actual computations done below.

if nargin == 1
  mean = sum(x)/length(x)
  size = length(x)
else
  error('Please enter input vector')
end
```

Commonly Used Commands	
get	Obtain properties of a graphical object
set	Specify properties of a graphical object
propedit	Open the Property Editor for viewing and editing properties of graphical objects
demo	View listing of available demonstrations
guide	Open graphical user interface building tool
image	Display image
polyfit	Fit polynomial to data
sound	Play sound

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MATLAB®

Quick Reference

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In MATLAB, type `doc functionname` for more information on any of these functions, or type `help` for a complete list of available functions.

Operators and Special Characters	
`+,-,*,/`	Matrix math operators
`.*,./`	Array multiplication and division
`^,.^`	Matrix and array power
`\`	Left division or linear optimization
`:`	Create linearly spaced vectors (e.g., `A=1:.01:10,A(90:end))`
`( )`	Index into matrix (e.g., `A(3,2)` pulls the third row, second column of A), and enclosed function input arguments
`[ ]`	Create matrix (e.g., `A = [1 2; 3 4], x=[1 2 3])`
`{ }`	Create and index cell array
`.`	Decimal point, or in a variable, denotes a structure (e.g., `user.Name = 'Paul')`
`...`	Line continuation
`,`	Separate commands or elements in matrix
`;`	Denote new row in matrix definition, or at the end of command, suppress output (e.g., `A=[1;3] or x=5;)`
`%`	Comment
`!`	Call the operating system
`'`	Transpose, or quote for defining strings
`.'`	Nonconjugated transpose (for complex numbers)
`=`	Variable assignment
`==`	Equality
`<>,<=,>=`	Relational operators
`&,|,~,xor`	Logical `AND, OR, NOT` and `XOR`

Starting and Quitting MATLAB	
`finish`	MATLAB finish M-file
`matlabrc`	MATLAB startup M-file for system administrator or single-user system
`quit`	Terminate MATLAB
`startup`	MATLAB startup M-file for each user

Managing Commands and Functions	
`addpath rmpath`	Add/remove directories from MATLAB search path
`clc`	Clear the command line
`doc`	Show documentation for functions
`edit`	Open MATLAB Editor/Debugger
`help or helpwin`	Display help for MATLAB functions and M-files
`helpbrowser`	Find and display documentation
`lookfor`	Keyword search through M-file help
`path`	Control MATLAB directory search path
`type`	List file
`version`	MATLAB version number
`what`	Directory of M-files, MAT-files, and MEX-files
`which`	Locate functions and files

Managing Variables and the Workspace	
`clear`	Remove items from memory
`disp`	Display text or array
`length`	Length of vector
`load`	Retrieve variables from disk
`pack`	Consolidate workspace memory
`save`	Save workspace variables on disk
`size`	Array dimensions
`who, whos`	List directory of variables in memory

Elementary X-Y Graphs	
`loglog`	Log-log scale plot
`plot`	Linear plot
`plotyy`	Graphs with y tick labels on the left and right
`polar`	Polar coordinate plot
`semilogx semilogy`	Semi-log scale plot for x- and y-axes

LinSpec Arguments for plot	
Line Style	
`-`	Solid line (default)
`--`	Dashed line
`:`	Dotted line
`-.`	Dash-dot line
Marker	
`+`	Plus sign
`o`	Circle
`*`	Asterisk
`.`	Point
`x`	Cross
`s`	Square
`d`	Diamond
`^`	Upward pointing triangle
`v`	Downward pointing triangle
`>`	Right pointing triangle
`<`	Left pointing triangle
`p`	Five-pointed star (pentagon)
`h`	Six-pointed star (hexagon)
Color	
`r`	Red
`g`	Green
`b`	Blue
`c`	Cyan
`m`	Magenta
`y`	Yellow
`k`	Black
`w`	White