MATLAB Quick Reference Guide

General

`help`	help function
`demo, intro`	demo and intro to MATLAB
`whos, what`	info on variables or files
`pwd, cd`	create, change directory
`size, length`	size and length of matrices
`tic, toc`	determine computation time
`clear all`	clear all workspace variables
`clearvars -except ...`	likewise, except …
`clc`	clear command window
`format`	set output number format, e. g. `format long g`
`addpath`	adds programs or data in another folder so that MATLAB can find them

Symbols

`%`	helptext, comment
`[ ... ]`	matrix definition or output arguments
`( ... )`	priority or input arguments
`=`	assignment
`:`	indexing and vector definition, forcing/converting to a standing vector
`;`	no output in main window
`' ... '`	define a text string

Operators

`+, -`	add and subtract
`*, /, ^`	matrix wise multiplication, division, exponentiation
`.*, ./, .^`	elementwise operations

Relational Operators

`>, >=`	larger than, larger or equal
`<, <=`	smaller than, smaller or equal
`==, ~=`	equal to, not equal to
`&, |, ~`	logical and, or, not

Predefined Numbers

`pi`	π
`inf`	∞, e. g. $1/0$
`nan`	not a number, e. g. $0/0$
`1i`	imaginary unit
`eps`	floating point accuracy

Standard Functions (element-wise)

`cos, sin, tan`	trigonometric functions (radian)
`cosd, sind, tand`	likewise (degree)
`acos, asin, atan, atan2`	inverse trigonometric functions (radian)
`acosd, asind, atand`	likewise (degree)
`exp, log`	power of e, natural logarithm
`log10`	base 10 logarithm
`sqrt, realsqrt`	square root
`nthroot`	n^{th} root
`round, fix, ceil, floor`	rounding commands
`abs, sign`	absolute value, sign

Matrices

`ones, zeros`	create matrices filled with 1 or 0
`eye`	unit matrix
`magic`	magical square
`rand, randn`	random numbers (uniform/normal)
`diag`	diagonal matrix creation/extraction
`fliplr, flipud`	horizontal or vertical mirroring
`rot90`	rotate matrix 90 degrees
`meshgrid`	create grid

Statistical Operators (columnwise)

`sum, cumsum`	sum and cumulative sum
`diff`	difference between subsequent elements
`mean, std`	mean, standard deviation
`min, max`	minimum, maximum
`sort`	sorting

Linear Algebra (matrixwise)

`inv`	invert
`eig`	eigenvalue decomposition
`chol`	Cholesky decomposition
`det, trace`	determinant, trace
`rank`	rank of a matrix
`'`	transpose
`\`	solver for linear systems of equations

Graphics

`figure`	opens a new figure window
`close all`	closes all open figures
`plot, plot3`	curve plot 2D, 3D
`polar`	polar coordinate plot
`semilogy`	semi-log scale plot
`loglog`	log-log scale plot
`plotyy`	y-tick labels on the left and right
`hist, bar`	bar diagram (e. g. histogram
`pcolor`	matrix representation (nodes)
`image`	matrix representation (cells)
`surf, mesh`	3D surface
`colormap`	color table
`colorbar`	color bar
`axis, grid`	manipulate axes and grids
`view`	rotate the view
`hold on, hold off`	keep/overwrite previous figure content
`xlabel, ylabel, zlabel, title`	annotation
`text, gtext`	positioning of text (also interactively)

Programming Structures

`function [...] = name(..., ...)`	function m-file header
`return`	exit a function
`nargin, nargout`	number of input/output arguments
`isempty, isscalar, isvector, is...`	checks if a variable is empty, a scalar, a vector, …
`if ... elseif ... else ... end`	if-block
`switch ... case ... otherwise ... end`	switch-block
`for ... end`	for-loop
`while ... end`	while-loop
`break`	exit a loop
`continue`	continue a loop with the next turn
`input`	keyboard input
`keyboard`	returns to the command prompt in debug mode