

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

Symbols

% - helptext, comment
[] - matrix definition or output arguments
() - priority or input arguments
= - assignment
: - indexing and vector definition
; - 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, unequal to
& | ~ - logical and, or, not

Predefined Numbers

pi - π
inf - infinity (e.g. 1/0)
nan - not a number (z.B. 0/0)
i,j - imaginary unit
eps - floating point accuracy

Standard Functions (element-wise)

cos, sin, tan - trigonometric functions
acos, asin, atan - inverse ...
exp, log - power of e, natural logarithm
log10 - base 10 logarithm
sqrt - square root
round, fix - rounding commands
abs, sign - absolute value, sign

Matrices

ones, zeros - create 1 or 0 matrices
eye - unit matrix
magic - magical square
rand, randn - random numbers (uniform/normal)
diag - diagonal matrix creation/extraction
fliplr, flipud - horizontal or vertical mirroring
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 - Choleski decomposition
det, trace - determinant, trace
rank - rank
' - transpose

Indices and Masks

find - search (general)
isnan, isinf - finds NaN and Inf
all - all elements satisfy condition?
any - at least one element satisfies condition?

Graphics

plot, plot3 - curve plot
hist, bar - bar diagram (e.g. histogram)
pcolor - matrix representation (nodes)
image - matrix representation (cells)
surf, mesh - 3D surfaces
colormap - color table
colorbar - color bar
axis, grid - manipulate axes and grids
view - rotate the view
xlabel, ylabel, zlabel, title - annotation
text, gtext - positioning of text (also interactively)

Programming Structures

function [...] = name(..., ...) - function M-file header
nargin - # input arguments
nargout - # output arguments
for ... end - for-loop
if...else...elseif...end - if-block
while... end - while-loop
input - keyboard input