

% An edited MATLAB reference card

>> help

HELP topics:

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- matlab/ops
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- General purpose commands.

- Operators and special characters.

- Programming language constructs.

- Elementary matrices and matrix manipulation.

- Elementary math functions.

- Specialized math functions.

- Matrix functions - numerical linear algebra.

- Data analysis and Fourier transforms.

- Interpolation and polynomials.

- Function functions and ODE solvers.

- Sparse matrices.

- Two dimensional graphs.

- Three dimensional graphs.

- Specialized graphs.

- Handle Graphics.

- Graphical user interface tools.

- Character strings.

- File input/output.

- Time and dates.

- Data types and structures.

- Examples and demonstrations.

For more help on directory/topic, type "help topic".

>> help elmat

Elementary matrices and matrix manipulation.

Elementary matrices.

- zeros
- ones
- eye
- repmat
- rand
- randn
- linspace
- logspace
- meshgrid
- :

Basic array information.

- Size of matrix.
- Length of vector.
- disp
- isempty
- isequal
- isnumeric
- islogical
- logical

Matrix manipulation.

- reshape
- diag
- tril
- triu
- flipplr
- flipud
- find
- end
- sub2ind
- ind2sub

Special variables and constants.

- ans
- eps
- realmax

- Zeros array.

- Ones array.

- Identity matrix.

- Replicate and tile array.

- Uniformly distributed random numbers.

- Normally distributed random numbers.

- Linearly spaced vector.

- Logarithmically spaced vector.

- X and Y arrays for 3-D plots.

- Regularly spaced vector and index into matrix.

- realmin
- pi
- i, j
- inf
- NaN
- isnan
- isinf
- isfinite
- flops

>> help elfun

Elementary math functions.

Trigonometric.

- sin
- sinh
- asin
- asinh
- cos
- cosh
- acos
- acosh
- tan
- tanh
- atan2
- atanh
- sec
- sech
- csc
- csch
- cot
- coth

Exponential.

- exp
- log
- log10
- sqrt

Complex.

- abs
- angle
- conj
- imag
- real
- isreal

Rounding and remainder.

- fix
- floor
- ceil
- round
- mod
- rem
- sign

>> help lang

Programming language constructs.

Control flow.

- if
- else
- elseif
- end
- for
- while
- break
- switch

- Conditionally execute statements.

- IF statement condition.

- IF statement condition.

- Terminate scope of FOR, WHILE, SWITCH and IF.

- Repeat statements a specific number of times.

- Repeat statements an indefinite number of times.

- Terminate execution of WHILE or FOR loop.

- Switch among several cases based on expression.

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case - SWITCH statement case.
otherwise - Default SWITCH statement case.
return - Return to invoking function.

Evaluation and execution.
eval - Execute string with MATLAB expression.
feval - Execute function specified by string.
run - Run script.

Scripts, functions, and variables.
script - About MATLAB scripts and M-files.
function - Add new function.
global - Define global variable.
filename - Name of currently executing M-file.
exist - Check if variables or functions are defined.
isglobal - True for global variables.

Argument handling.
nargchk - Validate number of input arguments.
nargin - Number of function input arguments.
nargout - Number of function output arguments.

Message display.
error - Display error message and abort function.
warning - Display warning message.
errortrap - Skip error during testing.
disp - Display an array.
fprintf - Display formatted message.
sprintf - Write formatted data to a string.

Interactive input.
input - Prompt for user input.
keyboard - Invoke keyboard from M-file.
pause - Wait for user response.

>> help ops

Operators and special characters.

Arithmetic operators.
plus - Plus
minus - Minus
mtimes - Matrix multiply
times - Array multiply
mpower - Matrix power
power - Array power
mldivide - Backslash or left matrix divide
mrdivide - Slash or right matrix divide
ldivide - Left array divide
rdivide - Right array divide
kron - Kronecker tensor product

Relational operators.
eq - Equal
ne - Not equal
lt - Less than
gt - Greater than
le - Less than or equal
ge - Greater than or equal

Logical operators.
and - Logical AND
or - Logical OR
not - Logical NOT
xor - Logical EXCLUSIVE OR
any - True if any element of vector is nonzero
all - True if all elements of vector are nonzero

Special characters.
colon - Colon
paren - Parentheses and subscripting ( )
bracket - Brackets [ ]

punct - Continuation
punct - Semicolon
punct - Comment
punct - Assignment
punct - Quote
transpose - Transpose
ctranspose - Complex conjugate transpose
...
;
%
=
'
,
'

>> help matfun

Matrix functions - numerical linear algebra.

Matrix analysis.
norm - Matrix or vector norm.
rank - Matrix rank.
det - Determinant.
null - Null space.

Linear equations.
\ and / - Linear equation solution; use "help slash".
inv - Matrix inverse.
cond - Condition number with respect to inversion.
chol - Cholesky factorization.
lu - LU factorization.

Eigenvalues and singular values.
eig - Eigenvalues and eigenvectors.
svd - Singular value decomposition.
poly - Characteristic polynomial.
condeig - Condition number with respect to eigenvalues.

Matrix functions.
expm - Matrix exponential.
logm - Matrix logarithm.
sqrtm - Matrix square root.
funm - Evaluate general matrix function.

>> help debug

Debugging commands.
dbstop - Set breakpoint.
dbclear - Remove breakpoint.
dbcont - Resume execution.
dbdown - Change local workspace context.
dbstack - List who called whom.
dbstatus - List all breakpoints.
dbstep - Execute one or more lines.
dbtype - List M-file with line numbers.
dbup - Change local workspace context.
dbquit - Quit debug mode.

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