

In the name of Him

A Summary of Commands Mostly Used in MATLAB

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Below a quick review has been provided with a brief description of all MATLAB functions mostly used in digital communications and digital signal processing labs. For additional details on these functions, use the help command.

Function	Description
abs	Computes the absolute value
angle	Computes the phase angle in radians
axis	Sets manual scaling of axes on plots
blackman	Generates the Blackman window coefficients
break	Terminates the execution of loops
butter	Designs digital and analog Butterworth filters of all four types
buttord	Selects the minimum order of the digital or analog Butterworth transfer function
case	Used with switch command
ceil	Rounds to the nearest integer towards $+\infty$
cheb1ord	Selects the minimum order of the digital or analog Type 1 Chebyshev transfer function
cheb2ord	Selects the minimum order of the digital or analog Type 2 Chebyshev transfer function
chebwin	Generates the Dolph-Chebyshev window coefficients
cheby1	Designs digital and analog Type 1 Chebyshev filters of all four types
cheby2	Designs digital and analog Type 2 Chebyshev filters of all four types

clc	Clears the Command Window
clf	Deletes all objects from the current figure
conj	Computes the complex conjugate
conv	Performs the multiplication of two polynomials
cos	Computes the cosine
decimate	Decreases the sampling rate of a sequence by an integer factor
deconv	Performs polynomial division
det	Calculates the determinant of a square matrix
disp	Displays text or a matrix on the screen
echo	Echoes M-files during execution
ellip	Designs digital and analog elliptic filters of all four types
ellipord	Selects the minimum order of the digital or analog elliptic transfer function
else	Delineates an alternate block of statements inside an if loop
elseif	Conditionally executes a block of statements inside an if loop
end	Terminates a loop
eps	Indicates floating-point relative accuracy
error	Displays an error message
exp	Computes the exponential
fft	Computes the discrete Fourier transform coefficients
filter	Filters data with an IIR or FIR filter implemented in the transposed direct form II structure
filtfilt	Performs zero-phase filtering of data
fir1	Designs linear-phase FIR filters of all four types using the windowed Fourier series method
fir2	Designs linear-phase FIR filters with arbitrary magnitude responses using the windowed Fourier series method
firpm	Designs linear-phase FIR filters using the Parks-McClellan algorithm
firpmord	Determines the approximate order, normalized band edges, frequency band magnitude levels, and weights to use with the firpm command
fix	Rounds towards zero
fliplr	Flips matrices left to right
flipud	Flip matrix in up/down direction.
floor	Round towards minus infinity.
for	Used for repeated execution of a block of statements a specific number of times
format	Controls the format of the output display
freqs	Computes the complex frequency response of an analog transfer function at specified frequency points
freqz	Computes the complex frequency response of a digital transfer function at specified frequency points
function	Used to generate new M-functions
grid	Adds or deletes grid lines to or from the current plot
grpdelay	Computes the group delay of a digital transfer function at specified frequency points
gtext	Places a text on a graph with the aid of a mouse
hamming	Generates the Hamming window coefficients

hann	Generates the von Hann window coefficients
help	Provides online documentation for MATLAB functions and M-files
hold	Holds the current graph
if	Conditionally executes statements
ifft	Computes the inverse discrete Fourier transform coefficients
imag	Determines the imaginary part of a complex number or matrix
impz	Computes a specific number of the impulse response coefficients of a digital transfer function
input	Requests data to be supplied by the user
interp	Increases the sampling rate of a sequence by an integer factor
inv	Determines the inverse of a matrix
kaiser	Determines the Kaiser window coefficients
kaiserord	Determines the filter order and the parameter β of a Kaiser window
latc2tf	Determines the transfer function from the specified lattice parameters and the feed-forward coefficients of the Gray-Markel realization
legend	Inserts a legend on the current plot using the specified strings as labels
length	Determines the length of a vector
linspace	Generates linearly spaced vectors
load	Retrieves saved data from the disk
log10	Computes the common logarithm
lookfor	Provides keyword search through all help entries
max	Determines the largest element of a vector
min	Determines the smallest element of a vector
NaN	Not-a-number
nargin	Indicates the number of arguments inside the body of a function M-file
num2str	Converts a number to its string representation
ones	Generates a vector or a matrix with element values 1
otherwise	Used with switch command
pause	Halts execution temporarily until user presses any key
pi	Returns the floating-point number nearest to π
plot	Generates linear 2-D plots
poly2rc	Determines the coefficients in the cascade realization of an IIR allpass transfer function
rand	Generates random numbers and matrices uniformly distributed in the interval (0 , 1)
randn	Generates random numbers and matrices normally distributed with zero mean and unity variance
real	Determines the real part of a complex number or matrix
rem	Determines the remainder of a matrix divided by another matrix of same size
resample	Changes the sampling rate of a sequence by a rational number
residue	Determines the partial-fraction of a discrete-time transfer function expressed as a ratio of polynomials in z

residuez	Determines the partial-fraction of a discrete-time transfer function expressed as a ratio of polynomials in z^{-1}
return	Causes a return to the keyboard or to the invoking function
roots	Determines the roots of a polynomial
save	Saves workspace variables on a disk
sawtooth	Generates a sawtooth wave with a period 2π
sign	Implements the signum function
sin	Determines the sine
sinc	Computes the sinc function of a vector or array
size	Returns the matrix dimensions
sqrt	Computes the square root
square	Generates a square wave with a period 2π
stairs	Draws a stair step graph
stem	Plots the data sequence as stems from the x axis terminated with circles for the data value
subplot	Breaks figure window into multiple rectangular panes for the display of multiple plots
sum	Determines the sum of all elements in a vector
tf2latc	Determines the lattice-parameters and the feed-forward coefficients in the Gray-Markel realization of an IIR transfer function
tf2zp	Determines the zeros, poles, and gains of the specified transfer function
title	Write specified text on the top of the current plot
unwrap	Eliminates jumps in phase angles to provide smooth transition across branch cuts
what	Provides directory listing of files
which	Locates functions and files
while	Repeats statements an indefinite number of times
who	Lists the current variables in the memory
whos	Lists the current variables in the memory, their sizes, and whether they have non-zero imaginary parts
xlabel	Write specified text below the x-axis of the current 2-D plot
ylabel	Write specified text on the left side of the y-axis of the current 2-D plot
zeros	Generates a vector or a matrix with element 0
zp2sos	Determines an equivalent second-order representation from a specified zero-pole-gain representation
zp2tf	Determines the numerator and the denominator coefficients of a transfer function from its specified zeros, poles, and gains
zplane	Displays poles and zeros in the z-plane