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MATRIXx Information

Transitioning Xmath Functions to MATLAB

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Xmath Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	abcd	tf2ss	MATLAB	
Intrinsic	abort	dbquit	Built-in	
Intrinsic	abs	abs	Built-in	
Intrinsic	acos	acos	Built-in	Defined from -1 to 1 in Xmath, MATLAB returns complex value. ex: acos(1.5)
Intrinsic	acosh	acosh	Built-in	
DSP	Adconversion	NONE	NONE	CP2DP in Control System Toolbox converts continuous time transfer functions to discrete time transfer functions
Control	afeedback	NONE	NONE	
XMath	aiginterp	NONE	NONE	
XMath	alias	NONE	NONE	MATLAB does not have aliases. Can write your own function to set defaults.
Intrinsic	all	all	Built-in	
DSP	ambiguity	NONE	NONE	
XMath	animation	comet	MATLAB	See also MOVIE
Intrinsic	any	any	Built-in	
Control	append	append	Control System	See also DAUG in Mu-Analysis and Synthesis
XMath	argn	nargin,varargin,varargout	Built-in	
XMath	argv	nargin,varargin,varargout	Built-in	
MATRIXxD	arma	ar	System Identification	
MATRIXxD	armax	armax	System Identification	
MATRIXxD	arma2ss	NONE	NONE	No ARMA objects in MATLAB
Intrinsic	ascii	double	Built-in	
Intrinsic	asin	asin	Built-in	Defined from -1 to 1 in Xmath, MATLAB returns complex value for ex: asin(1.5)
Intrinsic	asinh	asinh	Built-in	
Intrinsic	atan	atan	Built-in	
Intrinsic	atanh	atanh	Built-in	Different method used to calculate for arguments >1 or <-1
Intrinsic	atan2	atan2	Built-in	
SystemBuild	autocode	rtwbuild	Real-Time Workshop	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
DSP	backdiff	c2d	Control System	
Model Reduction	balance	ssbal	Control System	
Model Reduction	balmoore	balreal	Control System	
DSP	bandpass	fdatool	Signal	Use MATLAB GUI for general filter design and select

DSP	bandstop	fdatool	Processing Signal Processing	bandpass Use MATLAB GUI for general filter design and select bandstop
Intrinsic MATRIXxD	beep bj	beep bj	MATLAB System Identification	MATLAB BEEP does not display a message
XMU XMU Control MATRIXxD	blkbal blknorm bode bpm	balance norm bode TBD	MATLAB MATLAB Control System System Identification	
MATRIXxD	bpmjoin	TBD	System Identification	
MATRIXxD	bpmsplit	TBD	System Identification	
MATRIXxD	bpm2inn	ssdata	System Identification	
Model Reduction	bst	srelbal	Mu - Analysis and Synthesis	
Intrinsic	build	Simulink	Simulink	
DSP	buttconstr	butter	Signal Processing	
DSP	butterworth	butter	Signal Processing	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
DSP	cancel	NONE	NONE	
MATRIXxD	canform	canform	System Identification	
SystemBuild	catalog (main)	NONE	Simulink	Simulink does not have an equivalent catalog browser
DSP	ccepstrum	cceps	Signal Processing	
Intrinsic	char	char	Built-in	
DSP	chebconstr	cheb1ord & cheby1, OR cheb2ord & cheby2	Signal Processing	Use CHEBXORD to get the lowest filter order and natural frequency, then use CHEBYX to generate a filter
DSP	chebyshev	cheby1, cheby2	Signal Processing	
Intrinsic	check	exist	Built-in	
Basic	chop	a = [.1, .5, .9]; a(abs(a) < tol) = 0	Built-in	No Built-in function, use example and enter desired tolerance (tol).
DSP	circonv	Resolution # 9080		http://www.mathworks.com/support/solutions/data/9080.shtr
DSP	circorr	Resolution # 10043		solution_10043.shtml
Intrinsic	clock	clock, OR tic & toc	Built-in	Use CLOCK to return time and date, use TIC and TOC to calculate elapsed time
Robust	clsys	des2ss	Robust Control	
DSP	coherence	cohere	Signal Processing	
Basic	colorind	cdata -- variable input to fcn	MATLAB Variable	e.g. surf(x,y,z,cdata)
DSP	combinePF	residue	MATLAB	Use three input arguments form
Xmath	command (*.mfc)	function M-file (*.m)	MATLAB	Function M-files create their own workspace
Intrinsic	comment	%	Built-in	Everything after % is treated as a comment
Intrinsic	commentof	NONE	NONE	You cannot place a comment on a variable, or workspace in MATLAB
Intrinsic	#	%	Built-in	Everything after % is treated as a comment
Model Reduction	compare	NONE	NONE	MODRED from Control System Toolbox can be used to reduce the system, then you can plot both systems on the same axes using BODE to get a visual representation of the differences between the two.
Intrinsic	complex number -- i OR j		Built-in	

	jay			
Intrinsic	condition	cond	MATLAB	
Intrinsic	conj	conj	Built-in	
DSP	conmap	???	???	Communications Toolbox???
Control	connect	connect	Control System	
XMU	conpdm	struct	Built-in	Structures are the closest thing to a PDM in MATLAB
XMU	consys	ss([1,1,1,1 2;3 4])	Control System	
Model Reduction	controllable	ctrb & ctrbf	Control System	CTRP & CTRBF return how controllable the system is.
Intrinsic	convolve	conv	MATLAB	
Basic	copyfile	!copy path_to_orig_file path_to_new_location	Built-in	Bang (shell) out to the OS to copy a file
DSP	correlate	xcorr	Signal Processing	
Intrinsic	cos	cos	Built-in	
Intrinsic	cosh	cosh	Built-in	
Intrinsic	cosm	NONE	MATLAB	
Intrinsic	cot	cot	MATLAB	
Intrinsic	coth	coth	MATLAB	
Basic	covariance	cov	MATLAB	
Intrinsic	csc	csc	MATLAB	
Intrinsic	csch	csch	MATLAB	
Basic	csum	cumsum	Built-in	
MATRIXxD	ctrctf	idss	System Identification	
XMU	ctrlplot	bode, nichols, nyquist, sigma	Control System	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
XMU	daug	daug	Mu-Analysis and Synthesis	
DSP	dbtolin	NONE	NONE	MATLAB does not have db units. They can be created using OOP.
Intrinsic	debug	dbstop	MATLAB	Debugger is also built into the MATLAB editor
DSP	decimate	decimate	Signal Processing	
Intrinsic	default	NONE	NONE	if !exist(arg) arg=[]; arg = value; end
Controls	deffreqrange	NONE	Signal Processing	
Intrinsic	define	NONE	NONE	Placing a function in a toolbox directory will have it parsed only when MATLAB starts.
Controls	deftimerange	NONE	NONE	
Basic	delaunay	delaunay	MATLAB	
DSP	delay	NONE	NONE	
Intrinsic	delete	clear, clear all, etc...	Built-in	
XMU	delsubstr	strep	Built-in	
Basic	demo	demo	MATLAB	
Intrinsic	det	det	Built-in	
DSP	detrend	detrend	MATLAB	
DSP	dht	gallery	MATLAB	GALLERY has an option (k) that specifies Hartley transform
Intrinsic	diagonal	diag	Built-in	
Basic	directory	whos	Built-in	Type "x = whos" to get the variables in the current workspace
Controls	discretize	c2d	Control System	
Intrinsic	display	display, disp	Built-in	
DSP	divide	NONE	NONE	MATLAB does not have polynomial objects. You can use TF to create a transfer function object
Intrinsic	domain	NONE	NONE	MATLAB does not have PDM's

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	echo	echo	Built-in	
Intrinsic	eiq	eiq	Built-in	
DSP	ellipconstr	ellip	Signal Processing	
DSP	elliptic	ellip	Signal Processing	
Intrinsic	erase	clc, clear, clf, cla	MATLAB	
Intrinsic	error	error	Built-in	
Control	estimator	estim	Control System	
MATRIXxD	etfe	etfe	System Identification	
Intrinsic	execute	eval	Built-in	
Intrinsic	exist	exist	Built-in	
Intrinsic	exit	break	Built-in	EXIT in MATLAB will exit your session
Intrinsic	exp	exp	Built-in	
Intrinsic	expm	expm	Built-in	
Intrinsic	eye	eye	Built-in	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	fft	fft, fft2	MATLAB	
DSP	fftpdm	fft		<pre>t = 0:0.001:0.6; x=sin(2*pi*50*t)+sin(2*pi*120*t); y = x + 2*randn(size(t)); N=length(Y); Y(1)= []; nyquist=1/2; freq=(1:N/2)/(N/2)*nyquist;</pre>
DSP	filter	filter	Signal Processing	
Intrinsic	find	find	Built-In	
DSP	firparks	remez	Signal Processing	REMEZ designs a linear-phase FIR filter using the Parks-McClellan algorithm. The Parks-McClellan algorithm uses the Remez exchange algorithm and Chebyshev approximation theory.
DSP	firremez	remez	Signal Processing	REMEZ designs a linear-phase FIR filter using the Parks-McClellan algorithm. The Parks-McClellan algorithm uses the Remez exchange algorithm and Chebyshev approximation theory.
DSP	firwind	fir1	Signal Processing	
XMU	fitsys	fitsys	Mu-Analysis and Synthesis	
Intrinsic	for	for	Built-In	
DSP	forwdiff	c2d	Control System	
Intrinsic	fprintf	fprintf	Built-In	
Basic	frac	a=rand(3); b=mod(a,1)	MATLAB	
Model Reduction	fracred	sfrwtbld???	Mu-Analysis and Synthesis	
Intrinsic	freq	freqresp	Control System	
DSP	freqcircle	<pre>th = (0:127)/128*2*pi; x=cos(th); y=sin(th); f=abs(fft(ones (10,1),128)) stem3 (x,y,f,'d','fill'); view([-65 30])</pre>	MATLAB	
DSP	freqcont	freqresp	Control System	
Robust	fsesti	TBD	TBD	
Robust	fslqgcomp	TBD	TBD	
Robust	fsregu	TBD	TBD	

MATRIXxD fwls TBD TBD

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
GUI	qdmesssage	questdlg	MATLAB	
Intrinsic	get	get	Built-in	ComparMATRIXxon of the environment variables is difficult
Intrinsic	getchoic	NONE	Built-in	Create a GUI using UICONTROL
LNX function	getenviron	NONE	NONE	Use ! with system commands
Basic	getfile	uigetfile	Built-in	
Intrinsic	getline	inputdlg	MATLAB	
MATRIXxD	get_inn	TBD	TBD	
MATRIXxD	giv	TBD	TBD	
MATRIXxD	givjoin	TBD	TBD	
MATRIXxD	giv2var	TBD	TBD	
Intrinsic	go	dbcont	Built-in	
Intrinsic	goto	NONE	NONE	
DSP	qqam	amod	Communications	"qam" is one of the options to be passed to AMOD
Basic	griddata	griddata	MATLAB	MATLAB contains additional methods
DSP	gsin	NONE	NONE	Construct matrix or struct with basic commands
XMU	gstep	NONE	NONE	Construct matrix or struct with basic commands

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Model Reduction	hankelsv	hank2sys	Communications	The HANK2SYS function does not plot a bar graph
Basic	hardcopy	print	MATLAB	
Intrinsic	help	help	Built-in	
Intrinsic	hessenberg	hess	Built-in	
DSP	highpass	NONE	NONE	Design a new filter (FIR1, FIR2, SPTOOL, etc...)
Basic	hilbert	hilb	MATLAB	
Robust	hinfcontr	ncfsyn	Mu-Analysis and Synthesis	CF2SYS, EMARGIN may also be helpful
XMU	hinfnorm	hinfnorm	Mu-Analysis and Synthesis	Use DHFNORM for discrete systems
XMU	hinfsyn	hinfsyn	Mu-Analysis and Synthesis	
Basic	histogram	hist	MATLAB	
XMU	h2norm	h2norm	Mu-Analysis and Synthesis	
XMU	h2syn	h2syn	Mu-Analysis and Synthesis	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
MATRIXxD	idfreq	freqresp	System Identification	
MATRIXxD	idimpulse	impulse	System Identification	Use IMPULSE from System Identification on an idmodel or iddata object
MATRIXxD	idsim	sim	System Identification	Use SIM from System Identification on an idmodel or iddata object
Intrinsic	if	if	Built-in	
Intrinsic	ifft	ifft	MATLAB	
Intrinsic	imag	imag	Built-in	
DSP	impinvar	impinvar	Signal Processing	

Control	impulse	impulse	Control System	
Intrinsic	index	findstr	Built-in	FINDSTR finds all instance of the string not only the first
Intrinsic	indexlist	cell	Built-in	MATLAB does not have indexed lists. Use Cell Arrays instead.
Control	initial	initial	Control System	
MATRIXxD	initmodel	pem	System Identification	InitialState property of the PEM function
MATRIXxD	initx0	pem	System Identification	value of 'Estimate' for InitialState of the PEM function
MATRIXxD	innjoin	???	???	Combines a deterministic and stochastic system and a variance matrix into an innovations model.
MATRIXxD	innsplit	???	???	Splits an innovations model into its stochastic and deterministic components.
MATRIXxD	inn2bpm	???	???	Converts state space innovations models to backward polynomial models.
MATRIXxD	inn2pe	pe	System Identification	
MATRIXxD	inn2unc	???	???	Computes frequency response confidence intervals.
Intrinsic	int	fix	Built-in	
Basic	integrate	quad, quadl	MATLAB	MATLAB computes the integral over a given region. Symbolic integration using INT from the Symbolic Math Toolbox
DSP	IntegrateDump	TBD	TBD	Sequentially integrates a signal over iPeriod seconds and outputs (dumps) the integrated values.
DSP	impplot	impz	Signal Processing	
XMU	interp	trsp,dtrsp	Mu -Analysis & Synthesis	
Basic	interpolate	interp1, interp2, interp3, interpn	MATLAB	note that Xmath function maps to a PDM, please determine what dimension interpolation you wish to implement
Intrinsic	inv	inv	Built-in	
Basic	invhilbert	invhilb	MATLAB	
Intrinsic	ipcwc	NONE	NONE	The MATLAB Engine or MATLAB MEX-files are used to run C or Fortran code with MATLAB functionality, but these functions run independent of what is happening in the MATLAB command window.
MATRIXxD	irea	imp2ss	Robust Control	
Intrinsic	is	is****	Built-in	Forms include ISCELL, ISCELLSTR, ISCHAR, ISEMPY, ISEQUAL, ISFIELD, ISFINITE, ISNAN, etc.

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
No functions beginning with J				

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	keep	NONE	NONE	
Intrinsic	kroncker	kron	MATLAB	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	length	prod(size(x))	Built-in	
Basic	licensecheckout	NONE	NONE	MATLAB will automatically check out license for the toolbox you are using
Basic	licensefile	NONE	NONE	
Basic	licenseinfo	NONE	NONE	All info is found in the license.dat file
Basic	licenseuser	NONE	NONE	
SystemBuild	lin	linmod	Simulink	

DSP	linearfm	chirp	Signal Processing	CHIRP is similar but not exactly the same
Robust SystemBuild	linfnorm linksim	norm NONE	Control System NONE	Compile MEX-file S-function into *.dll before running model (use MEX function)
DSP	lintodb	NONE	Signal Processing	
Intrinsic SystemBuild	list listusertype	cell NONE	Built-in NONE	No user defined variable types in MATLAB
Intrinsic	load	load	Built-in	
Intrinsic	lock	NONE	MATLAB	PERSISTENT and MLOCK can be used together to get similar results
Intrinsic	log	log	Built-in	
Intrinsic	logm	logm	MATLAB	
DSP	lognormal	lognrnd	Statistics	See also LOGNCDF, LOGNINV, LOGNPDF, and LOGNSTAT
Intrinsic	logspace	logspace	MATLAB	
Intrinsic	log10	log10	Built-in	
DSP	lowpass	fir1, fir2	Signal Processing	See also SPTOOL, FDATOOL, etc...
Optimize	lpopt	fmincon	Optimization	See also LINPROG, and LSQNLN
Control	lqgcomp	reg	Control System	
Robust	lqgltr	ltru	Robust Control	LTRU IS similar but not exactly the same
MATRIXxD	ls	TBD	TBD	
MATRIXxD	lsjoin	TBD	TBD	
MATRIXxD	ls2unc	TBD	TBD	
MATRIXxD	ls2var	TBD	TBD	
Intrinsic	lu	lu	Built-in	
Control	lyapunov	lyap, dlyap	Control System	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Control	makecontinuous	d2c	Control System	
Intrinsic	makematrix	str2num & str2mat	MATLAB	
Intrinsic	makepoly	NONE	NONE	Polynomials in MATLAB are represented as vectors
Control	margin	margin	Control System	
DSP	markoff	NONE	NONE	
DSP	matchedpz	c2d	Control System	
Intrinsic	max	max	Built-in	For matrices: Use max(mymatrix(:))
MATRIXxD	maxlike	NONE	NONE	
Basic	mean	mean	MATLAB	For matrices: Use mean(mymatrix(:))
XMU	mergeseg	NONE	NONE	
Intrinsic	min	min	Built-in	For matrices: Use min(mymatrix(:))
Model Reduction	minimal	NONE	NONE	
XMU	mkpert	dypert	Mu-Analysis and Synthesis	
XMU	mkphase	genphase	Mu-Analysis and Synthesis	
Intrinsic	mod	mod, & rem	MATLAB	Use MOD to get modulus; Use REM to get remainder
Model Reduction	modal	NONE	NONE	
XMU	modalstate	NONE	NONE	
DSP	modcarrier	amod	Communications	
Model Reduction	mreduce	NONE	NONE	
MATRIXxD	mtxplt	subplot	Built-in	
XMU	mu	mu	Mu-Analysis and	

Model Reduction	mulhank	hankmr	Synthesis Mu -Analysis and Synthesis
XMU	musynfit	musynfit	Mu -Analysis and Synthesis

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	names	fieldnames	MATLAB	
Intrinsic	new	MATLAB and Functions workspaces	MATLAB	
Intrinsic	next	Visual debugging	MATLAB	
Control	nichols	nichols	Control System	
Intrinsic	none	all	Built-in	
Intrinsic	norm	norm	Built-in	
Intrinsic	numden	tfddata	Control System	
Control	nyquist	nyquist	Control System	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
MATRIXxD	obscf	TBD	TBD	
Model Reduction	observable	obsv	Control System	
SystemBuild	ODASSL Integration	Stiff Solver -- ode15s, ode23s, ode23t, ode23tb	Simulink	
MATRIXxD	oe	oe	System Identification	
Intrinsic	ones	ones	Built-in	ONES in MATLAB with only one input will make a square matrix of ones
Intrinsic	operators (and PDMs)	operators (and Structs)	Built-in	Cannot perform math operations on Structures in MATLAB, you must index into them
Intrinsic	operators (Xmath)	See Operator Variable Conversion mapping	Built-in	
Model Reduction	ophank	ohklmr	Robust Control	
Optimize	optimize	lsqnonlin	Optimization	See also: LINPROG, FSOLVE
Robust	optscale	TBD	TBD	scales a matrix using an optimization technique. This algorithm computes guaranteed lower and upper bounds on the cost function $\text{norm}(D*M*\text{inv}(D))$ for all diagonal, positive matrices D
DSP	orderfilt	See Notes	Signal Processing	Please see MEDIANFILT, MEAN, MEDIAN, MIN, & MAX
XMU	orderstate	NONE	Control System	
Basic	orth	orth	MATLAB	
Intrinsic	oscmd	! OR dos OR unix	Built-in	
Robust	osscale	osborne	Robust Control	
SystemBuild	overconstrained DASSL	Stiff Solver -- ode15s, ode23s, ode23t, ode23tb	Simulink	Except for constrained DAE problems, integration results from ODASSL & DASSL are the same

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
DSP	padcrop	NONE	MATLAB	Index into vector, or Concatenate zeros onto the ends
DSP	partialsum	cumsum	MATLAB	
Intrinsic	pause	pause	MATLAB	
Intrinsic	pdm	struct	Built-In	
Basic	pdmplot	NONE	Built-In	
DSP	pdmslice	b=a(:,:,n) %Index into a 3D array	Built-In	

MATRIXxD	pem	rpem	System Identification	
Roboust	perplots	TBD	TBD	
Intrinsic	period	TBD	TBD	
Roboust	pfscale	ssv	Robust Control	
Xmath	pgui	guide	MATLAB	
DSP	phaseshift	NONE	NONE	
Constant	pi	pi	Built-In	
Intrinsic	pinv	pinv	MATLAB	
Basic	plot	plot, plot3	MATLAB	
Basic	aliases	Write a script m-file	MATLAB	
Basic	animation	getframe, movie	Built-In	
Basic	bar plots	bar, barh	MATLAB	
Basic	erase	clf, cla	MATLAB	
Basic	graph object	Get handle to a plot	MATLAB	
Basic	grids and graph lines	grid on, grid off	MATLAB	
Basic	holding plot options	use handle graphics to set default stye you want	MATLAB	
Basic	HPGL output	print -dhpgl	MATLAB	
Basic	keeping	hold on, hold off	MATLAB	
Basic	labelling	title, xlabel, ylabel, zlabel, legend, xticklable, yticklabel, zticklabel	MATLAB	
Basic	light source	light	MATLAB	
Basic	line styles	use handle graphics to set line properties	MATLAB	
Basic	logarithmic	loglog, semilogx, semilogy	MATLAB	
Basic	marker styles	specify CLM in the plot command; plot(1:10,1:10,'k-*')	MATLAB	
Basic	multiple plots	subplot	MATLAB	
Basic	positioning objects	use handle graphics; set(gca, 'position', [5 2 4 1]);	MATLAB	
Basic	projection	camproj	MATLAB	
Basic	resetting defaults	set defaults using handle graphics	MATLAB	
Basic	rotate and angle	rotate	MATLAB	
Basic	scale	use handle graphics to set DataAspectRatio	MATLAB	
Basic	scaling axes	xlim, ylim, zlim	MATLAB	
Basic	setting colors	handle graphics	MATLAB	
Basic	strip	a=rand(8,4);for i=1:4;subplot(4,1,i);plot(a(:,i));end	MATLAB	
Basic	templates	use handle graphics to set defaults	MATLAB	
Basic	text position or style	text, gtext	MATLAB	
Basic	tic marks	tic properites of handle graphics	MATLAB	
Basic	zooming	zoom	MATLAB	
DSP	pmdemod	demod	Signal Processing	
DSP	poisson	poissrnd, OR poisscdf	Statistics	Functions are very similar
DSP	poissonimpulse	TBD	TBD	
Basic	Polar Plots	polar	MATLAB	
Control	poleplace	place	Control System	
Control	poles	pole	Control System	

MATRIXxD	polezero	pzmap	Control System
MATRIXxD	poltrend	detrend	System Identification
Basic	polyfit	polyfit	MATLAB
Intrinsic	polynomial	MATLAB represents polynomials as row vectors	MATLAB
Basic	polyval	polyval	MATLAB
Basic	polyvalm	polyvalm	MATLAB
MATRIXxD	prbs	idinput	System Identification
Intrinsic	print	save	Built-In
Intrinsic	product	prod(x(:))	Built-In

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
GUI	qplot	plot, set, & get	MATLAB	No direct function map. Please see: PLOT, SET, & GET
Optimize	qpopt	quadprog	Optimization	
Intrinsic	qr	qr	Built-in	
SystemBuild	QuickSim integration	NONE	NONE	Use ode45, for systems such as this
Intrinsic	quit	quit OR exit	Built-in	
Intrinsic	qz	qz	Built-in	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
DSP	rampinvar	c2d	Control System	
Intrinsic	random	rand, randn	Built-in	
XMU	randpdm	NONE	NONE	PDM's do not exist in MATLAB
XMU	randpert	randel	Mu-Analysis and Synthesis	
XMU	randsys	sysrand	Mu-Analysis and Synthesis	
Intrinsic	rank	rank	MATLAB	
DSP	rcepstrum	rceps	Signal Processing	
Intrinsic	rcond	rcond	Built-in	MATRIXx uses LINPACK, MATLAB uses LAPACK
DSP	rdintegrate	quad	MATLAB	
Intrinsic	read	load	Built-in	See also TEXTREAD, DLMREAD, or FSCANF
xms	read_rawfile	NONE	NONE	
LNx function	read_sv	textread	MATLAB	
Intrinsic	real	real	Built-in	
Model Reduction	redschr	bstschmr, bstschml, schmr	Robust Control	Use SRELBAL to put in schur balanced form, then one of the reduction fcn's in Mu-Analysis and Synthesis
MATRIXxD	reflect	polystab	Signal Processing	
Xmath	refnum	License Number	MATLAB	
Control	regulator	reg	Control System	
Intrinsic	remove	NONE	NONE	
DSP	residue	residue	MATLAB	
Intrinsic	return	return	Built-in	
Control	riccati	are	Control System	ARE is an obsolete Function
XMU	riccati_eig	ric_eig	Mu-Analysis and Synthesis	
XMU	riccati_schr	ric_schr	Mu-Analysis and Synthesis	
DSP	ricean	NONE	NONE	

XMU	rifd	NONE	NONE	
Intrinsic	rlinfo	NONE	NONE	
Control	rlocus	rlocus	Control System	
Control	rms	NONE	NONE	
Intrinsic	rootlocus	rlocus	Control System	
Intrinsic	roots	roots	MATLAB	Different output order
Intrinsic	round	round, ceil, & fix	Built-in	
Basic	rref	rref	MATLAB	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	save	save	Built-in	
Intrinsic	schur	schur	Built-in	
XMath	Script files (*.ms)	Script M-File (*.m)	Built-in	Script executes as if you have typed commands at the MATLAB command prompt -- uses MATLAB workspace
MATRIXxD	sdf	psd	Signal Processing	
MATRIXxD	sds	????n4sid???	System Identification	
XMU	sdtrsp	sdtrsp	Mu-Analysis and Synthesis	
Intrinsic	sec	sec	MATLAB	
Intrinsic	sech	sech	MATLAB	
XMath	Selecting Graphic Objects	get	Built-in	Use GET and the objects handle to select it -- Use SET to modify the object
Intrinsic	SET			
Intrinsic	set autocompile	Toolbox Caching	Built-in	Set this in the MATLAB preferences
Intrinsic	set break	dbstop in mfile at line#	Built-in	
Intrinsic	set buffering	NONE	MATLAB	Once an output is available it is displayed
Intrinsic	set build	NONE	Simulink	Simulink will open when the model name is typed
Intrinsic	set commanddiary	diary	Built-in	DIARY ON & DIARY OFF will begin and end a diary session
Intrinsic	set debugonerror	dbstop if error	Built-in	
Intrinsic	set directory	cd path_to_directory	Built-in	CD will change directories in MATLAB in the same way that CD works in DOS or UNIX OS's
Intrinsic	set display	NONE	MATLAB	Once an output is available it is displayed unless a semicolon is placed at the end of the line of code
Intrinsic	set distribution	rand -- uniform distribution & randn -- normal distribution	Built-in	
Intrinsic	set echo	echo	Built-in	Explicitly turn ECHO ON and ECHO OFF in your M-Files
Intrinsic	set format	format format_option	Built-in	FORMAT_OPTIONS -- short, long, short e, long e, short g, long g, hex, +, bank, rat, compact, loose
Intrinsic	set logarea	NONE	MATLAB	
Intrinsic	set path	addpath, rmpath, path	MATLAB	
Intrinsic	set partition	dbup, dbdown	Built-in	DB* functions can only be used while debugging
Intrinsic	set pause	NONE	MATLAB	All PAUSE commands will be executed
Intrinsic	set precMATRIXxon	format format_option	Built-in	FORMAT_OPTIONS -- short, long, short e, long e, short g, long g, hex, +, bank, rat, compact, loose
Intrinsic	set seed	rand & randn	Built-in	Enter seed in the function call
Intrinsic	set sessionDiary or set commandDiary	diary	Built-in	DIARY ON & DIARY OFF will begin and end a diary session
Intrinsic	set timeStamp	NONE	MATLAB	MATLAB does not save a timestamp with its variables
Intrinsic	set uiupdate	NONE	MATLAB	MATLAB does not have an equivalent option to stop updates
Intrinsic	set watch	NONE	MATLAB	MATLAB does not have an equivalent option to monitor a variable during debugging
xms	setsbdefault	NONE	Simulink	Simulink does not allow changing the default "preferences"

Intrinsic	SHOW			
Intrinsic	show buffering	NONE	MATLAB	Once an output is available it is displayed
Intrinsic	show commanddiary	get(0, 'Diary')	MATLAB	
Intrinsic	show commands	NONE	MATLAB	
Intrinsic	show directory	cd, pwd	Built-in	
Intrinsic	show display	NONE	MATLAB	Once an output is available it is displayed unless a semicolon is placed at the end of the line of code
Intrinsic	show distribution	NONE	Built-in	Use different functions for different distributions -- RAND -- uniform & RANDN -- normal
Intrinsic	show echo	get(0, 'Echo')	MATLAB	
Intrinsic	show format	get(0, 'Format')	MATLAB	
Intrinsic	show functions	NONE	MATLAB	
Intrinsic	show debug	dbstack	MATLAB	
Intrinsic	show debugonerror	NONE	MATLAB	Choose "Stop If Error" from the Debug menu in the MATLAB Editor
Intrinsic	show logarea	NONE	MATLAB	
Intrinsic	show partition	dbup, dbdown, & whos	Built-in	DB* functions can only be used while debugging
Intrinsic	show partitions	dbup, dbdown, & whos	Built-in	DB* functions can only be used while debugging
Intrinsic	show path	path	MATLAB	
Intrinsic	show precMATRIXxon	get(0, 'Format')	MATLAB	
Intrinsic	show seed	NONE	MATLAB	Seed is entered in the function calls
Intrinsic	show sessiondiary	get(0, 'Diary')	MATLAB	
Intrinsic	show variables	who, whos	Built-in	
Intrinsic	show uiupdate	NONE	MATLAB	
xms	showsdefault	NONE	Simulink	Cannot change the default "preferences" in Simulink
Intrinsic	sign	sign	Built-in	
xms	sim function	sim	Built-in	
xms	simout	[sizes,x0,xord] = Simulink_Model_Name	Simulink	
XMU	simtransform	ss2ss	Control System	See also: STATECC in Mu-Analysis and Synthesis
Intrinsic	sin	sin	Built-in	
Robust	singriccati	aresolv	Robust Control	
Intrinsic	sinh	sinh	Built-in	
Intrinsic	sinm	NONE	MATLAB	
Intrinsic	size	size	Built-in	
Robust	smargin	ncfsyn	Mu-Analysis and Synthesis	
Basic	sns2sys	ss	Control System	
Intrinsic	sort	sort	Built-in	
XMU	spectrad	vrho	Mu-Analysis and Synthesis	
DSP	spectrum	pwelch	Signal Processing	
Basic	spline	spline	MATLAB	
Intrinsic	sprintf	sprintf	Built-in	
Intrinsic	sqrt	sqrt	Built-in	
Intrinsic	sqrtm	sqrtm	MATLAB	
XMU	sresidualize	sresid	Mu-Analysis and Synthesis	
MATRIXxD	sst	TBD	TBD	
Robust	ssv	ssv	Robust Control	
MATRIXxD	ss2arma	NONE	NONE	MATLAB does not have arma objects
Basic	stable	NONE	Control System	
Intrinsic	stair	NONE	Control System	
XMU	starp	starp	Mu-Analysis and Synthesis	

Xmath	Startup file	startup.m file	MATLAB	User created file that executes on startup
Control	step function	step	Control System	
DSP	stepinvar	c2d	Control System	
Intrinsic	stop	!kill -9 (UNIX only)	Built-in	You must bang (shell) out to the operating system
Intrinsic	string	num2str, int2str, & mat2str	MATLAB	
Intrinsic	stringex	strrep	MATLAB	
XMU	substr	strtok	MATLAB	
DSP	subsys	c2d	Control System	
SystemBuild	subsystems	NONE	Simulink	Simulink Subsystems are analogous to SuperBlocks.
Intrinsic	sum	sum	MATLAB	
Intrinsic	svd	svd	Built-in	
Model Reduction	svplot	NONE	Control System	
MATRIXxD	sweep	chirp	Signal Processing	
DSP	symbolmap	base2dec, dec2base	MATLAB	See also: HEX2NUM, HEX2DEC, DEC2HEX, BIN2DEC, & DEC2BIN
XMU	sysic	sysic	Mu-Analysis and Synthesis	
Intrinsic	system	ss, tf, OR zpk	Control System	
SystemBuild	SystemBuild	Simulink	Simulink	
Basic	sys2sns	NONE	Control System	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	tan	tan	Built-in	
Intrinsic	tanh	tanh	Built-in	
MATRIXxD	taper	See Notes	Signal Processing	Use one of the following BARTLETT, BLACKMAN, BOXCAR, CHEBWIN, HAMMING, HANN, KAISER and TRIANG
MATRIXxD	tfid	TBD	TBD	
Intrinsic	toeplitz	toeplitz	MATLAB	
Intrinsic	trace	trace	MATLAB	
Intrinsic	tril	tril	Built-in	
SystemBuild	trim	trim	Simulink	
Intrinsic	triu	triu	Built-in	
XMU	trsp	trsp	Mu-Analysis and Synthesis	
Model Reduction	truncate	sysls & hankmr	Mu-Analysis and Synthesis	
Basic	tsearch	tsearch	MATLAB	
DSP	tustin	c2d	Control System	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	uiButton	button style in UICONTROL	Built-in	ex: but = uicontrol('Style', 'pushbutton', 'String', 'Clear', 'Position', [20 150 100 70]);
Intrinsic	uiComboBox	popup style in UICONTROL	Built-in	ex: pop = uicontrol('Style', 'popup', 'String', 'hsv hot cool', 'Position', [20 320 100 50]);
Intrinsic	uiDestroy	close	Built-in	CLOSE closes current figure. "close('name')" closes named figure. "close(h)" closes figure with handle h.
Intrinsic	uiExist	findobj	Built-in	
Intrinsic	uiFileSelection	uigetfile	Built-in	
Intrinsic	uiFlush	drawnow	Built-in	
Intrinsic	uiGetValue	get	Built-in	
Intrinsic	uiHandle	get	Built-in	
Intrinsic	uiHide	set	Built-in	ex: set(gcf, 'vMATRIXxble', 'off') to make current figure

Intrinsic	uiLabel	text style in UICONTROL	MATLAB	invMATRIXxble. NOTE:(gcf is the current figure handle ex: txt = uicontrol('style','text','string','this is my GUI');
Intrinsic	uiList	listbox style in UICONTROL	MATLAB	ex: lstbx = uicontrol('Style','listbox','string','item1 item2 item3','position',[20 200 200 100]);
Intrinsic	uiMenu	uimenu	Built-in	
Intrinsic	uiMenuItem	uimenu	Built-in	
Intrinsic	uiMessage	msgbox	MATLAB	
Intrinsic	uiPanel	frame style in UICONTROL	Built-in	ex: fra = uicontrol('style','frame','position',[20 100 200 300]);
Intrinsic	uiPlot	plot & subplot	Built-in	GUI & graphs use same Figure window
Intrinsic	uiPlotArea	plot & subplot	MATLAB	GUI & graphs use same Figure window
Intrinsic	uiPlotGet	ginput	MATLAB	
Intrinsic	uiPrompt	inputdlg	MATLAB	
Intrinsic	uiSeparator	NONE	NONE	
Intrinsic	uiSetValue	set	Built-in	
Intrinsic	uiShow	set	Built-in	ex: set(gcf,'vMATRIXxble','on') to make current figure vMATRIXxble. NOTE:(gcf is the current figure handle ex: sli = uicontrol('style','slider','position',[10 40 100 20]);
Intrinsic	uiSlider	slider style in UICONTROL	Built-in	
Intrinsic	uiTab	tabdlg	MATLAB	
Intrinsic	uiTable	NONE	NONE	
Intrinsic	uiText	edit style in UICONTROL	Built-in	ex: edt = uicontrol('style','edit','position',[15 30 100 30]);
Intrinsic	uiTimer	NONE	NONE	
Intrinsic	uiToolCreate	guide	MATLAB	
Intrinsic	uiVarChoice	uicontrol	Built-in	
Intrinsic	uiVarEdit	set	Built-in	Set the callback of the UI object
Intrinsic	uiVarView	set	Built-in	Set the callback of the UI object
Intrinsic	uiWindow	guide	MATLAB	
Intrinsic	uiWindowDeiconify	NONE	NONE	
Intrinsic	uiWindowIconify	NONE	NONE	
Intrinsic	uiWindowLower	NONE	NONE	
Intrinsic	uiWindowRaise	NONE	NONE	
Intrinsic	unalias	NONE	NONE	
Intrinsic	undefine	NONE	NONE	Remove function from the MATLAB path
Intrinsic	unlock	NONE	NONE	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
MATRIXxD	val	NONE	NONE	
Basic	variance	var	MATLAB	
Basic	version	ver	MATLAB	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Robust	wcbode	TBD	TBD	
Robust	wcgain	TBD	TBD	
Intrinsic	whatis	which	Built-in	
Intrinsic	while	while	Built-in	
Intrinsic	who	who, whos	Built-in	
DSP	window	fir1, fir2	Signal Processing	
Basic	write_sv	dlmwrite, csvwrite	MATLAB	
Model Reduction	wtbalance	sfrwtbal	Mu -Analysis and Synthesis	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
DSP	xgraph	plot	Built-in	
Xmath	XmathCommand	NONE	NONE	
Xmath	XmathLoad	NONE	NONE	
Xmath	XmathSave	NONE	NONE	

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
No functions beginning with Y				

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MATRIXx Module	MATRIXx Function	MathWorks Function	MathWorks Toolbox	Notes
Intrinsic	zeros	zeros	Built-in	

