MATLAB: AN INTRODUCTION I

Exercise 2.

Function, operators, special characters	Description of function, operators and special characters
help	On-line documentation. HELP, by itself, lists all primary help topics.
help topic	"HELP topic" gives help on the specified topic
	matrix generation
+	Plus
-	Minus
*	Matrix multiplication
.*	Array multiplication
^	Matrix power
.^	Array power
\	Backslash or left division
/	Slash or right division
./	Array division
:	Colon
= =	Equality
< >	Relational operators
&	Logical AND
|	Logical OR
~	Logical NOT
xor	Logical EXCLUSIVE OR
det(x)	Determinant. DET(X) is the determinant of the square matrix X.
inv(x)	Matrix inverse. INV(X) is the inverse of the square matrix X.
	Sequences. Vectors as discrete - time signals.
	Harmonic signal generation.
rand(n,m)	Normally distributed random numbers, matrices and signal
randn(n,m)	generation.
	Normally distributed random numbers, matrices and signal generation.
hist(x)	Plot histograms. HIST(Y) plots a histogram with 10 equally spaced bins between the minimum and maximum values in Y, showing the distribution
	of the elements in vector Y. HIST(Y,N), where N is a scalar, uses N bins.
	noisy signal generation
mean(x)	Average or mean value. For vectors, MEAN(X) is the mean value of
std(x)	the elements in X.
	Standard deviation. For vectors, STD(x) returns the standard deviation.
(1:1000)	special sequences

Function, operators, special characters	Description of function, operators and special characters
length(x)	Number of components of a vector. LENGTH(X) returns the length of vector X.
size(x)	Matrix dimensions. D = SIZE(X), for M-by-N matrix X, returns the two-element row vector D = [M, N] containing the number of rows and columns in the matrix.
plot(x)	Plot vectors or matrices. PLOT(X,Y) plots vector X versus vector Y. If X or Y is a matrix, then the vector is plotted versus the rows or columns of the matrix, whichever line up.
stem(x)	Plot discrete sequence data. STEM(Y) plots the data sequence Y as stems from the x-axis terminated with circles for the data value. STEM(X,Y) plots the data sequence Y at the values specfied in X.
grid	Grid lines for 2-D and 3-D plots
title ('text')	Titles for 2-D and 3-D plots. TITLE('text') adds text at the top of the current axis.
xlabel('text')	X-axis labels for 2-D and 3-D plots. XLABEL('text') adds text beside the X-axis on the current axis.
ylabel('text')	Y-axis labels for 2-D and 3-D plots. YLABEL('text') adds text beside the Y-axis on the current axis.
hold on	Hold the current graph.
hold off	HOLD ON holds the current plot and all axis properties so that subsequent graphing commands add to the existing graph. HOLD OFF returns to the default mode whereby PLOT commands erase the previous plots and reset all axis properties before drawing new plots.
fft(x)	Discrete Fourier transform. FFT(X) is the discrete Fourier transform of vector X.
abs(x)	Absolute value and string to numeric conversion. ABS(X) is the absolute value of the elements of X. When X is complex, ABS(X) is the complex modulus (magnitude) of the elements of X.
angle(x)	Phase angle. ANGLE(H) returns the phase angles, in radians, of a matrix with complex elements.
log10(x)	Common logarithm. LOG10(X) is the logarithm base 10 of the elements of X. Complex results are produced if X is not positive.
log(x)	Natural logarithm. LOG(X) is the natural logarithm of the elements of X. Complex results are produced if X is not positive. Signal to noise ratio computation
filter(x)	Y = FILTER(B, A, X) filters the data in vector X with the filter described by vectors A and B to create the filtered data Y.
[h,w] = freqz(b,a,n)	Digital filter frequency response. To plot magnitude and phase of a filter: [h,w] = freqz(b,a,n); mag = abs(h); phase = angle(h); semilogy(w,mag), plot(w,phase)