Colons in MATLAB

Generating Vectors;

a = x:y (x = start value) (y = maximum possible end value)

[x, x+1, x+2, …, y’] (y’ <= y)

e.g.1

a = 3:9

[3 4 5 6 7 8 9]

e.g.2

a = 3:8.7

[3 4 5 6 7 8]

With offset;

a = x:k:y

[x, x+1k, x+2k, …, y’]

k essentially sets new integral

e.g.1

a = 3:2:9

[3 5 7 9]

e.g.2

a = 3:2:9

[3 5 7 9]

e.g.3

a = 9:-1:5

[9 8 7 6 5]

a = -1:0.5:2

[-1 -0.5 0 0.5 1 1.5 2]

Indexing matrices;

a(i, j)

element of matrix ‘a’ sitting in row i, column j

a = [3 2 1; 6 5 4];

| 3 2 1 |  
| 6 5 4 |

Then,

a(2, 1) = 6 (cell from row 2, column 1)

a(:, 1) = | 3 | (cells from all – ‘:’ – of column 1)  
 | 6 |

Cat;

a = | 1 2 3 4 |  
 | 5 6 7 8 |  
 | 9 10 11 12|  
 |13 14 15 16|

a(:) = 1  
 5  
 9  
 13  
 2  
 6  
 10  
 14  
 3  
 …  
 12  
 16