AMSC/CMSC460 Section 2.

MATLAB Exercise 1. Version 2 2011.03.31

For N=3 and M=4,

1. write a MATLAB code:

a) Define NxM-dimensional matrix A and M-dimensional vector b

b) Construct row vectors a^r_n for n=1,..,N, and column vectors a^c_m for m=1,…,M of A (what is the dimension of a^r_n and a^c_m?)

2. Write "function codes" that compute c=A b (what is the dimension of c?) by
a) Brute force (i.e., element by element)
b) Row-oriented approach
c) Column-oriented approach

3. Verify your "function codes" against MATLAB operation c= A*b using

```
nA=sqrt(3)*[1:1:3]';   mA=sqrt(2)*[0:1:3];
mb=[1 4 5 2]';

A=sin(pi*nA)*cos(pi*mA);
b=cos(mb);
```

4. Plot
a) [1:1:M] vs a^r_n for n=1:N in one figure with
   - x axis between [1 N] & y axis between [-1 1]

b) a^c_m vs [1:1:N]' or m=1:M & b in one figure with
   - x axis between [-1 1] & y axis between [1 M]

For both figures
- change color & add a circle at the data point for each line
- put x and y labels with fontsize 12