4.   a)   Write down a one-line Matlab® command to create the matrix A shown below.

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}$$

>> A = [1, 2, 3; 1, 0, 0; 0, 1, 0]

   b)   Given the values in matrix A for part (a), find the value of

A(2, :)

A(2,:) = 1   0   0

   c)   Given the values in matrix A for part (a), find the value of

A(A+1)

$$A(A+1) = A\left(\begin{bmatrix} 2 & 3 & 4 \\ 2 & 1 & 1 \\ 1 & 2 & 1 \end{bmatrix}\right) = \begin{bmatrix} A(2) & A(3) & A(4) \\ A(2) & A(1) & A(1) \\ A(1) & A(2) & A(1) \end{bmatrix} = \begin{bmatrix} 1 & 0 & 2 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$$

5.   Write the exact code you would enter at the command prompt in Matlab to compute the following quantity:

$$\left|\sqrt{e^4 + 1}\right|$$

>> abs(sqrt(exp(4)+1))

6.   Suppose the following matrix has been defined in Matlab®:

$$Q = \begin{bmatrix} 1 & 3 \\ 0 & 2 \\ 4 & 5 \\ 7 & -3 \end{bmatrix}$$

   a)   What is result of the following Matlab® command:

      mean(Q)

$$\text{mean(Q)} = \frac{1+0+4+7}{4}, \frac{3+2+5+-3}{4}.$$

ans =

3	1.75

   b)   What is result of the following Matlab® command:

      sum(max(Q'))

$$\text{sum(max(Q'))} = \text{sum([3, 2, 5, 7])} = 17$$

ans =

17