MATLAB Programming NCTU Spring 2017 LAB#1 2017/3/3

For this lab, the goal is just to get familiar with some basic operations covered in the class. There are a few short practices. Notes:

(1) **No loop** or anything like that is to be used.

(2) Use only functions mentioned in the class so far, unless noted otherwise.

Practices:

1. Given any vector, convert it to a row vector.
2. Given any vector, convert it to a column vector.
3. Given a vector v of length 4 representing two fractal numbers, give the text output of its fractal sum:

   Example: v: `3 7 5 2` Your output: `3/7+5/2=41/14`

   Note: Use `fprintf` for this task.
4. Compute `1/1 + 1/2 + 1/3 + ... + 1/999 + 1/1000`.
5. Compute `1 + 1/1! + 1/2! + 1/3! + ... + 1/100!`. (Note: `cumprod` is useful here.) Compare the result with `exp(1)`.
6. Make `n`x`n` matrices (`n` given in a variable) that look like all zeros surrounded by a layer of ones. Example for `n`=5:

```
1 1 1 1 1
1 0 0 0 1
1 0 0 0 1
1 0 0 0 1
1 1 1 1 1
```

7. Make `n`x`n` diagonal matrices (`n` given in a variable) that where the diagonal values are 1 to `n`. Hint: First determine the linear indices of the diagonal elements. Example for `n`=5:

```
1 0 0 0 0
0 2 0 0 0
0 0 3 0 0
0 0 0 4 0
0 0 0 0 5
```

   Hint: First determine the linear indices of the diagonal elements, and then assign `1:n` to them.