Exercise 1 - Reading and Writing Vectors

Objectives

Find and open the text file `read_vector.txt`.You should see that this vector looks something like this:

```
0.08770080813237739,0.2452704803478602,0.3388977081692914,0.7322334903920571
...
```

These are just a bunch of *comma-seperated values* – a relatively common format for storing numerical data. Learning to read, write and manipulate CSVs is a useful skill to develop. Your objectives are to:

- Read the vector on to Matlab into a vector named `vals`.
- Find the mean of the vector `vals.`
- Create a vector called `diff` that stores the difference between each element of `vals` and its mean. That is, if the mean of the vector `vals` is 0.32 (say), then the first element of diff should be $0.087700 - 0.32$, the second should be $0.245270 - 0.32$, and so on.
- Save the vector `diff` to a file named `output.txt`. Except, this time, we want to store values like this:

```
0.0877
0.245
..
```

That is, we want a “vertical” list of values as opposed to a comma-separated list.

Hints and Useful Functions

- Matlab provides loads of I/O (Input/Output) functions for doing exactly this sort of thing. Run a help on the following: `load, save, dlmread, dlmwrite, csvread, csvwrite.`
- You can supply file names as arguments to these functions, but they need to be enclosed by single quotes – `'strings'.`
- Remember that you can mix vectors and scalars. `A - x` works when `A` is a vector and `x` is a scalar, it simply subtracts `x` from *every* element of `A.`