Section 3: Learning how to use Octave

Daniel Woods

GNU Octave Tutorial report

My initial experience with Octave was that it seemed clunky to use and the syntax was a bit on the strange size. It seems like it is very particular about where the spaces are placed, and it won't work if you put them in the incorrect places. I had a little trouble picking up the syntax at first, but while I was figuring the program out it became very intuitive and easier. I chose from 2 different tutorials, and I will link them at the bottom.

One of the problems I had initially was that in both tutorials I chose, they were both working in the command line version of Octave and I was trying to write my code in scripts so I could run them multiple times and debug them. This was a problem because when you run code in Octave, the console window doesn't pop up automatically. I didn't realize that it was at the bottom at first, so I ran into some trouble when my code wouldn't run and I had to guess what was wrong.

The first function I decided to write after reading much of the tutorial was to simply plot x from -10 to 10 and y as the sin(x). I added a variable to the function so that one could specify the coefficient of x as their own custom number. When the function is not supplied to the variable, it defaults to 1. The resulting chart is below:
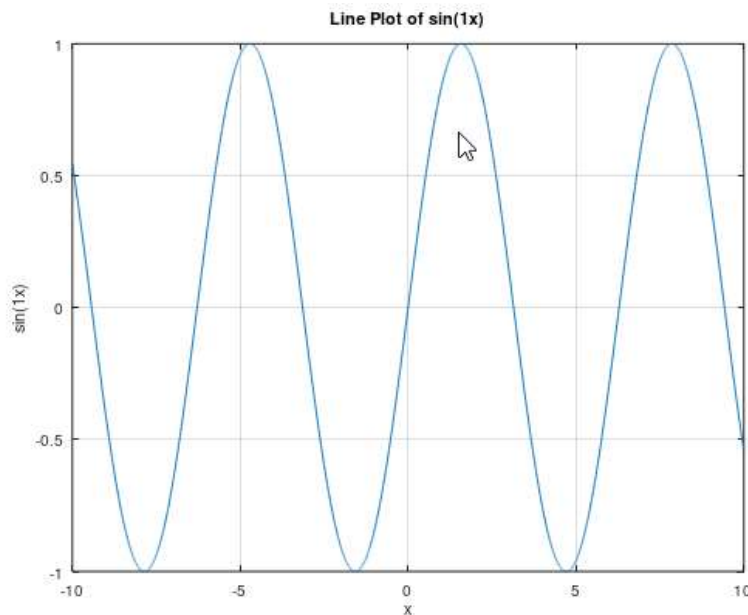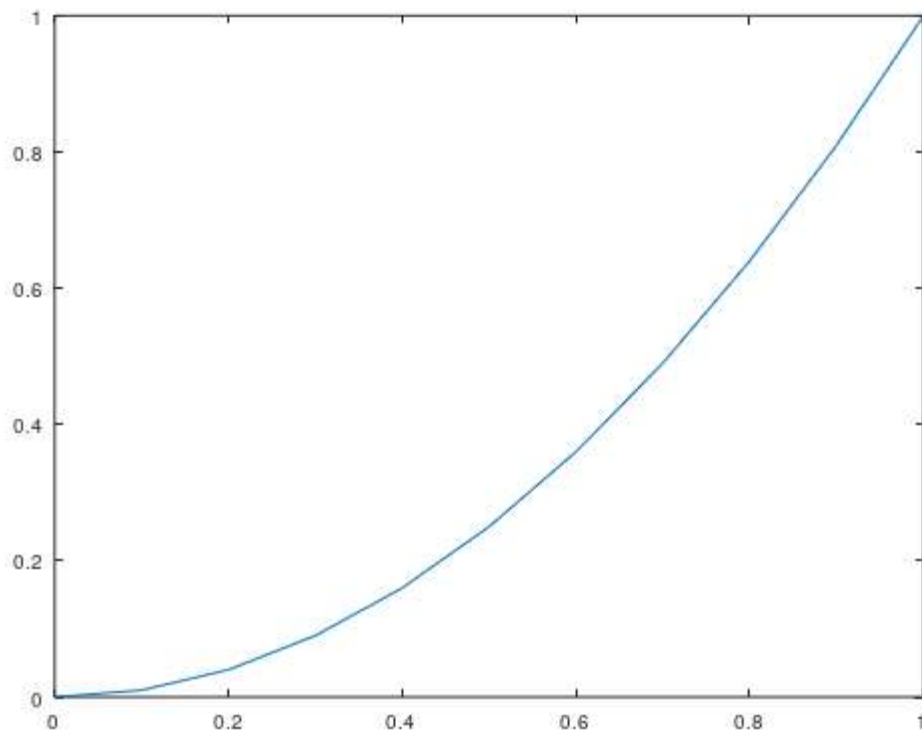
The second function that I wrote was from the video tutorial. The function takes no input, and it creates a matrix out of 2 vector variables. The matrix, z, is x transposed and multiplied by y, which is equal to x. It appears that y is extraneous, and z could have been instantiated by z=x' * x instead of also creating y, but I shadowed the author of the tutorial. The contour chart can be seen below:
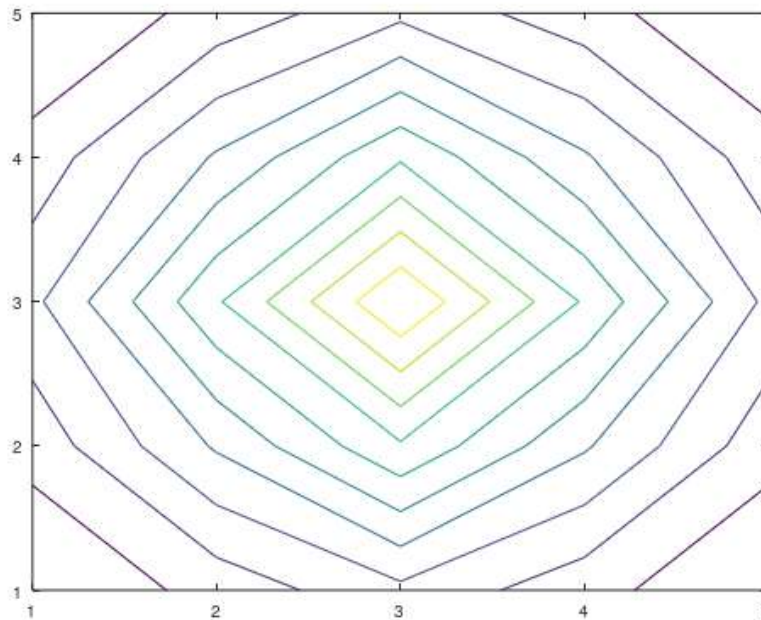
Some of the shorthand I learned during the tutorial I picked up directly from the Octave documentation. Some important things to remember are that if you're declaring a matrix manually, you separate rows with a semi-colin. A vector is declared by putting numbers in brackets, separated by spaces. Most math problems are the same syntax as regular math. A couple notable exceptions are exponents which are represented by the base and the exponent separated by **. As mentioned before, you can transpose a matrix by putting an apostrophe right after the variable representing a matrix.

The third script I wrote on Octave was the script that generates a plot from a CSV. I didn't find detailed instructions in either of the 2 tutorials I was using, so I found a specific tutorial just for this. My implementation uses a method called fopen to generate a file ID required by fscanf and it reads the data into a matrix, which I manipulate and use to plot the data in the CSV file. You'll see the output pasted below:

The tutorials I used are:

For introduction: https://www.youtube.com/playlist?list=PL1A2CSdiySGJ6oZe6XB-TTCFuHc5Fs1PO

For syntax: http://www-mdp.eng.cam.ac.uk/web/CD/engapps/octave/octavetut.pdf

For CSV: https://www.youtube.com/watch?v=cLo2UOBU5yY