CMPT 423/820

Assignment 1 Question 1

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Ensuring your installation works correctly

Open this document in Jupyter Notebook. If you have opened this notebook, you should see a mixture of document and Python code. Near the bottoom of the document, you should see a plot of a red line and a blue line.

In [1]:

```
# As with a pure Python script, we can import modules.
# This is a good one to know.

import matplotlib.pyplot as plt
```

A notebook intermingles document and code. It's best to think of a notebook as a way of adding fancy internal documentation to a Python script (or other supported language). If you are new to Jupyter Notebooks, be sure to figure out the difference between a code cell, as immediately above, and a markdown cell, which is this one.

This is a `markdown` cell, which means it converts text to formatted display. The type of a cell can be determined by a drop down menu you can find near the top of this window. Go look. The Markdown language allows you a wide variety of formatting options. Check the Help menu for a link to external Markdown reference websites.

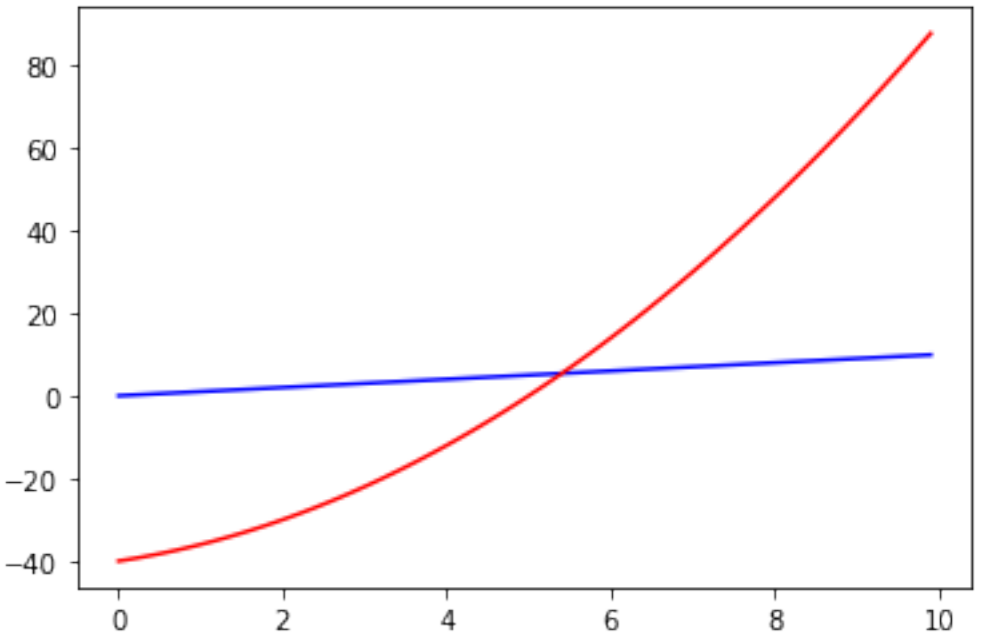
In [2]:

```
# This is a CODE cell.
# In this document, the code is Python, and all Python syntax ru
les apply.

# Let's define a couple of variables using Python's List Compreh
ension notation

xs = [i/10.0 for i in range(100)]
ys = [x**2 + 3*x - 40 for x in xs]
```

The command to plot data comes from the MatPlotLib library. The `plot()` function adds the data to a figure. In plain Python, nothing appears before the `show()` is called, but it turns out that Jupyter can render the figure even if you don't call `show()`.

In [4]:

```
# plot has a side-effect: to add the given data to an unseen set
of axes
plt.plot(xs, xs, "b-")
plt.plot(xs, ys, "r-")

# Make the plot visible.
plt.show()
```



Editing CODE cells

You can edit the code in any code cell, but for it to have an effect, you have to re-run the code. The keyboard command for that depends on your machine, but on my Mac, it's Ctrl-Enter. It's also available from the dropdown menu `Cell`, near the top of your window.

Note: If you re-run a single cell, the effect is limited to the current cell. You may rerun the whole notebook by finding an icon at the top of the window; the shape of the icon may be different depending on the compouter you are using, but it may look like an arrow circling on itself, or a couple of triangles pointing to the right. This is also available in the Kernel menu as `Restart and Run All`.

Note: If you ever change a module that you import, or if you want to see the effects of a change to the whole notebook, use the `Restart and Run All` button.

Producing a document to hand in

When using Jupyter Notebook, you'll want to keep a IPYN file. However, grading these files is awkward, so we will grade PDF files only. The best way to create a PDF is two steps:

1. Using the Jupyter Menu: `File > Download as... > HTML`
2. Open the downloaded HTML file with a Web-browser
3. Save the HTML document as PDF.

Jupyter does provide an option to download as PDF (via LaTeX) but this option is still too primitive; don't use it for submitting your work here.

Task

1. Open this document in Jupyter Notebook.
2. Edit the first cell to add your name and student number
3. Re-run the entire document.
4. Following the instructions above, produce a document called A1Q1.pdf.
5. Hand the document in on Moodle Assignment 1.

What to hand in

Your version of this notebook named A1Q1.pdf, containing your name and student number at the top.

Evaluation:

1 mark: Your version of this notebook is named A1Q1.pdf, and it contains your name and student number at the top.