

ECON526: Problem Set 1

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Name: _____

Student ID: _____

Instructions

- Ensure you modify the field above with your **name and student number above immediately**
- Modify directly and do not rename the file as Canvas will automatically append your name to it.
- Submit both the `.ipynb` and an exported `html` version of this file.
- See [here](#) for instructions.
- Do not change the filenames. Canvas automatically appends your name/student number to submitted files.

Setup

```
import numpy as np
import matplotlib.pyplot as plt
```

Install Python (with Jupyter and VS Code)

- See [here](#) for instructions and links.
- VS Code is optional but recommended.

Question 1

Modify the next cell with some math text with the Pythagorean theorem (e.g. $x^2 + y^2 = z^2$)

Answer:

(double click to edit your answer)

Question 2

Modify the next cell to create a function which takes the sides of the rectangle and calculates the hypotenuse (i.e., code up $z(x, y) = \sqrt{x^2 + y^2}$) then calculate $z(3, 4)$

```
# modify here
```

Question 3

Take the following system of equations, build a matrix, and solve for the system of equations using numpy's `linalg.solve` function.

$$2x_1 + 3x_2 = 5$$

$$4x_1 + 9x_2 = 20$$

```
# modify here
```

Question 4

Now take the following system

$$x_1 + 2x_2 = 5$$

$$2x_1 + 4x_2 = 10$$

Try this with `linalg.solve`. Why doesn't it work? If this has a solution, find it and explain.

```
# modify here
```

Answer:

(double click to edit your answer)

Question 5

Plot $f(x) = x^2$ for a grid of 20 points of $x \in [0, 1]$. Hint: You can make a grid with `np.linspace(...)` and use matplotlib's `plt.plot(...)` function.

```
# modify here
```