SSIE-500: Homework 1

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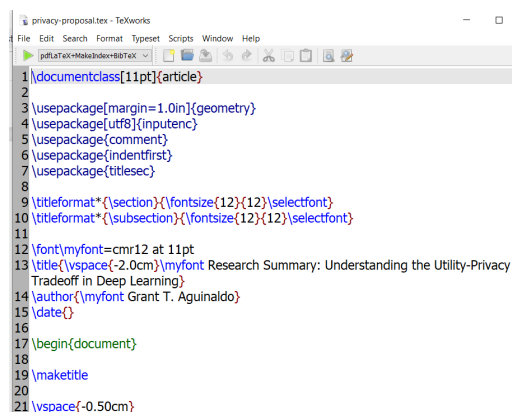
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1 LaTeX

This document was created using Overleaf and so what is provided below has been rendered from the LaTeX syntax and represents a calculation from a past linear algebra class.

Solve by setting the set of vectors equal to 0 and solving for a_1, a_2, a_3.

$$a_1(x^2) + a_2(x^2 - x - 1) + a_3(x + 1) = 0 \tag{1}$$

From this, we find that, $a_1 = 0, a_3 - a_2 = 0$. Since we have $a_3 = a_2$, we have a dependency in the set of vectors. If we remove the term $a_3(x + 1)$ from the set of vectors, we are able to solve for $a_1 = 0$, and $a_2 = 0$. Given that the $dim(A) = 2$, A spans R^2.

The screen shot below contains the markup of a document that created in TeXworks (installed on my local machine).

Figure 1: Screen Shot of TexWorks Markup.

2 Python, Jupyter Notebook

A screen shot of sample code that was written in a Jupyter Notebook is below.

```python
In [1]: import pandas as pd
        import numpy as np

        df = pd.DataFrame({'document_name': ['doc1', 'doc2', 'doc3', 'doc4', 'doc5', 'doc6'],
                          'document_relevance': [3, 2, 3, 0, 1, 2]})
        df
```
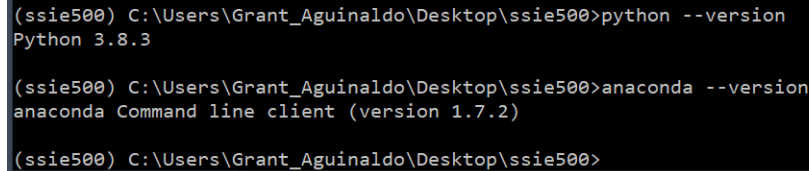
Out[1]:

	document_name	document_relevance
0	doc1	3
1	doc2	2
2	doc3	3
3	doc4	0
4	doc5	1
5	doc6	2

Figure 2: Screen Shot of sample code that was written in Jupyter Notebook.

Also, the version of Python and Anaconda that is installed on a local machine is shown below.

```
(ssie500) C:\Users\Grant_Aguinaldo\Desktop\ssie500>python --version
Python 3.8.3

(ssie500) C:\Users\Grant_Aguinaldo\Desktop\ssie500>anaconda --version
anaconda Command line client (version 1.7.2)

(ssie500) C:\Users\Grant_Aguinaldo\Desktop\ssie500>
```
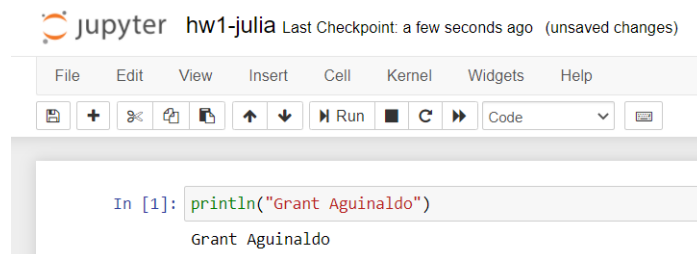
Figure 3: Screen Shot of Command Line Showing Python Version.

3 Julia

A screenshot of some Julia code that was written in a Jupyter notebook is shown below.

```julia
In [1]: println("Grant Aguinaldo")

        Grant Aguinaldo
```
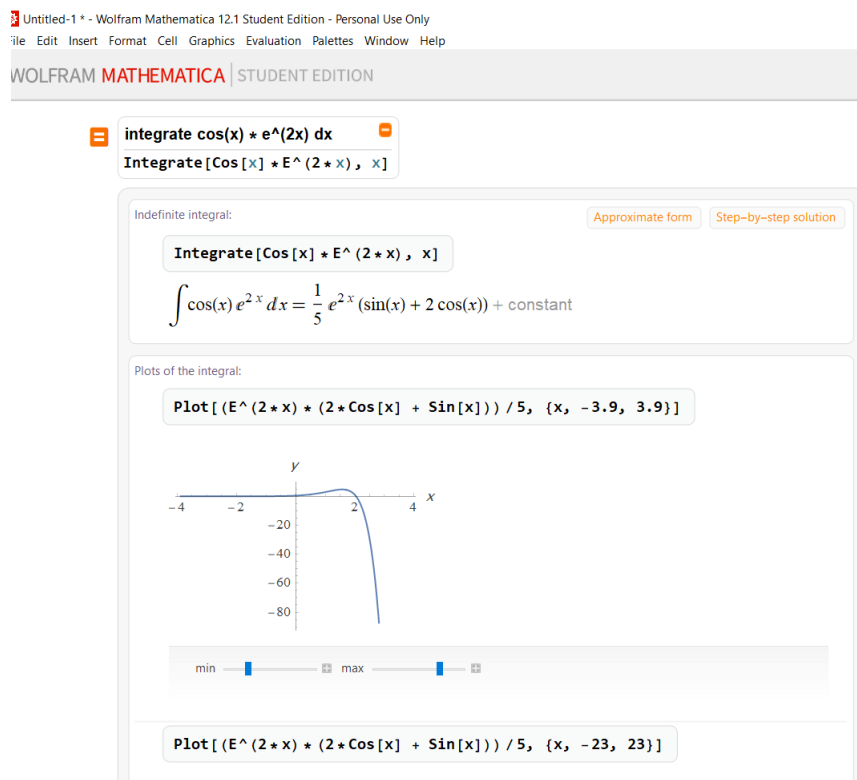
Figure 4: Screen Shot of Julia Syntax in a Jupyter Notebook.

4 Mathematica

A screen shot of code that was written in Mathematica is below. The code below is seeks to compute the following indefinite integral:

$$I = \int cos(x)e^{2x}dx \tag{2}$$

Figure 5: Screen Shot of an Example Calculation in Mathematica.