AMATH 301 Homework 1 Writeup

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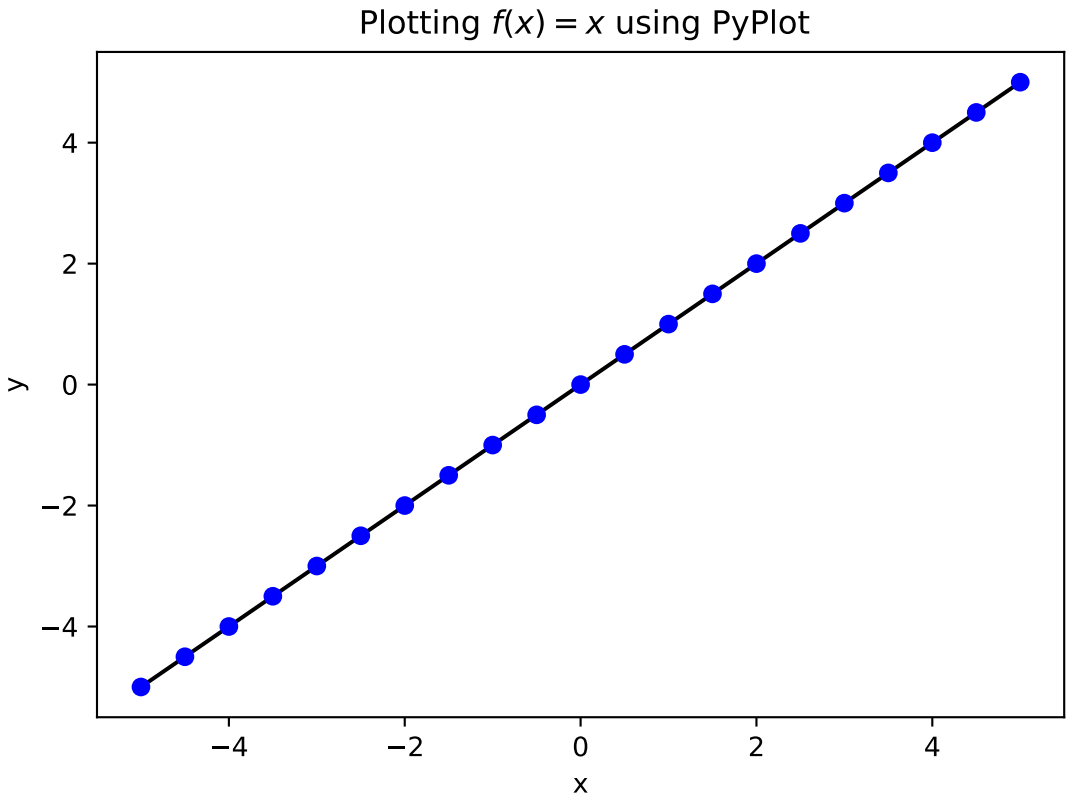
Problem 1:

Plot:



Analysis:
Q: Explain the connection between the blue circles in the plot and the black curve (e.g., how are they related?).

A: The connection between the blue circles in the plot and the black curve can be explained entirely by looking at the x and y arrays. In particular they both have the same elements, those being -5, -4.5, -4, -3.5, -3, -2.5, -2, -1.5, -1, -0.5, 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5. With that said, the blue dots on the black curve represent the ordered pairs (x,y) that pyplot uses to make the curve by attaching lines between these ordered pairs.

Code Used:

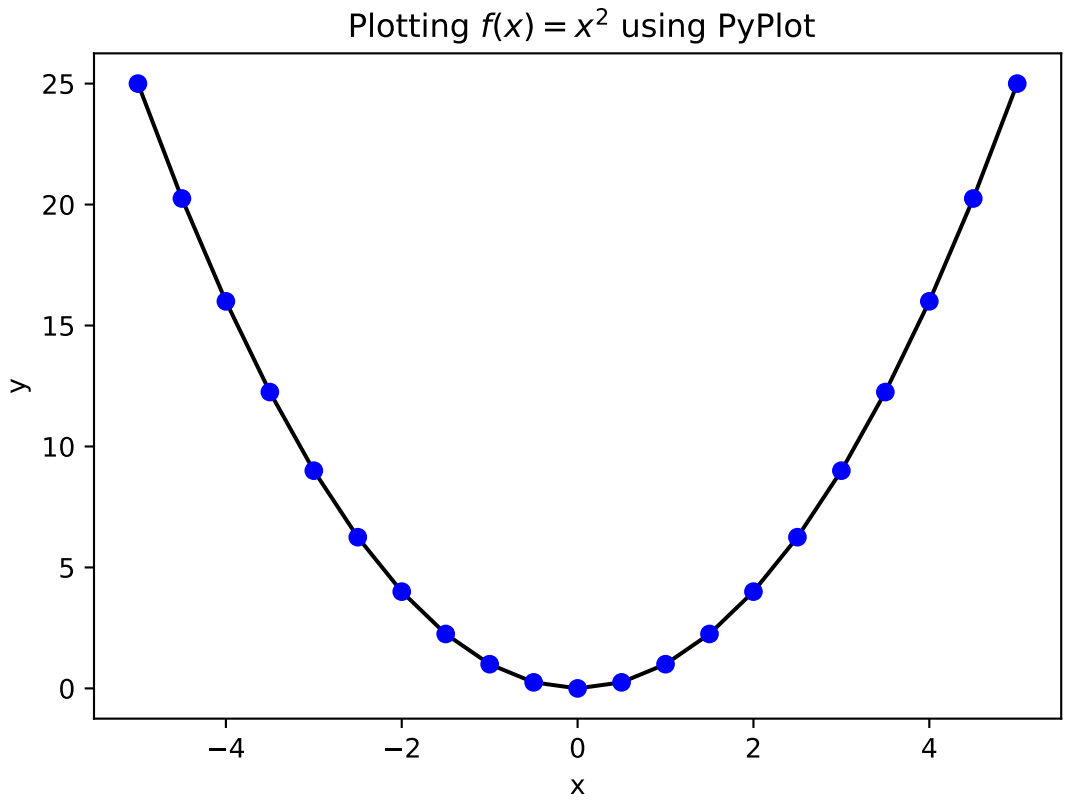
```
# Imports
import numpy as np
import matplotlib.pyplot as plt

# Problem 1
x = np.arange(-5, 5+0.5, 0.5)
y = x
plt.figure(1)
plt.plot(x, y, "k")
plt.plot(x, y, "bo")
plt.xlabel("x")
plt.ylabel("y")
plt.title(r' Plotting $f(x) = x$ using PyPlot')
plt.show()
```

Problem 2:

Description: Create another figure similar to the previous figure except representing the function $f(x) = x^2$. Add a title to the figure explaining what is being plotted.

Plot:



Code Used:

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

```
# Problem 2
x = np.arange(-5, 5+0.5, 0.5)
y = x ** 2
plt.figure(2)
plt.plot(x, y, "k")
plt.plot(x, y, "bo")
plt.xlabel("x")
plt.ylabel("y")
plt.title(r' Plotting $f(x) = x^2$ using PyPlot')
plt.show()
```