

math_functions

December 13, 2024

Math Functions

```
[13]: import matplotlib.pyplot as plt
import numpy as num
```

Step 1: Create x values

```
[15]: x_list = list(num.arange(-10, 11, 1))
print(x_list)
```

[-10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

Step 2: create functions

```
[16]: y_list = []
for i in x_list:
    y_list.append(i)

y_list2 = [-i for i in x_list]
print(y_list2)
```

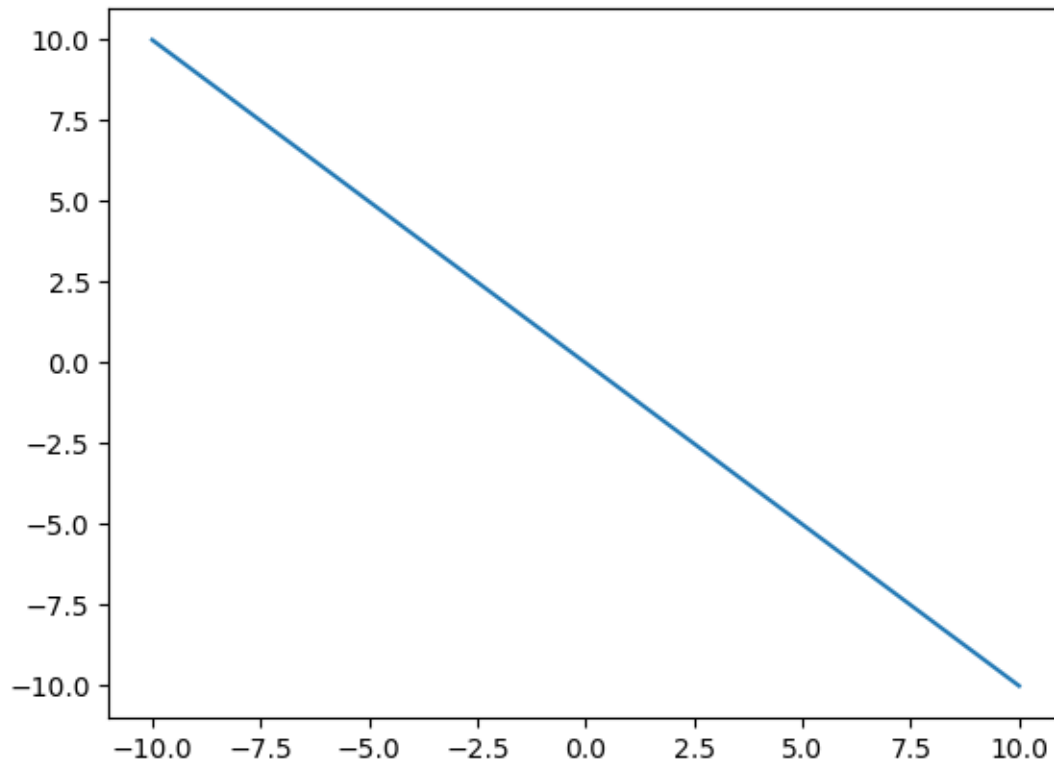
[10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0, -1, -2, -3, -4, -5, -6, -7, -8, -9, -10]

Pythonic

Step 3: plot the graph

```
[35]: fig, ax = plt.subplots()
ax.plot(x_list, y_list2)
```

```
[35]: [<matplotlib.lines.Line2D at 0x119b68a50>]
```



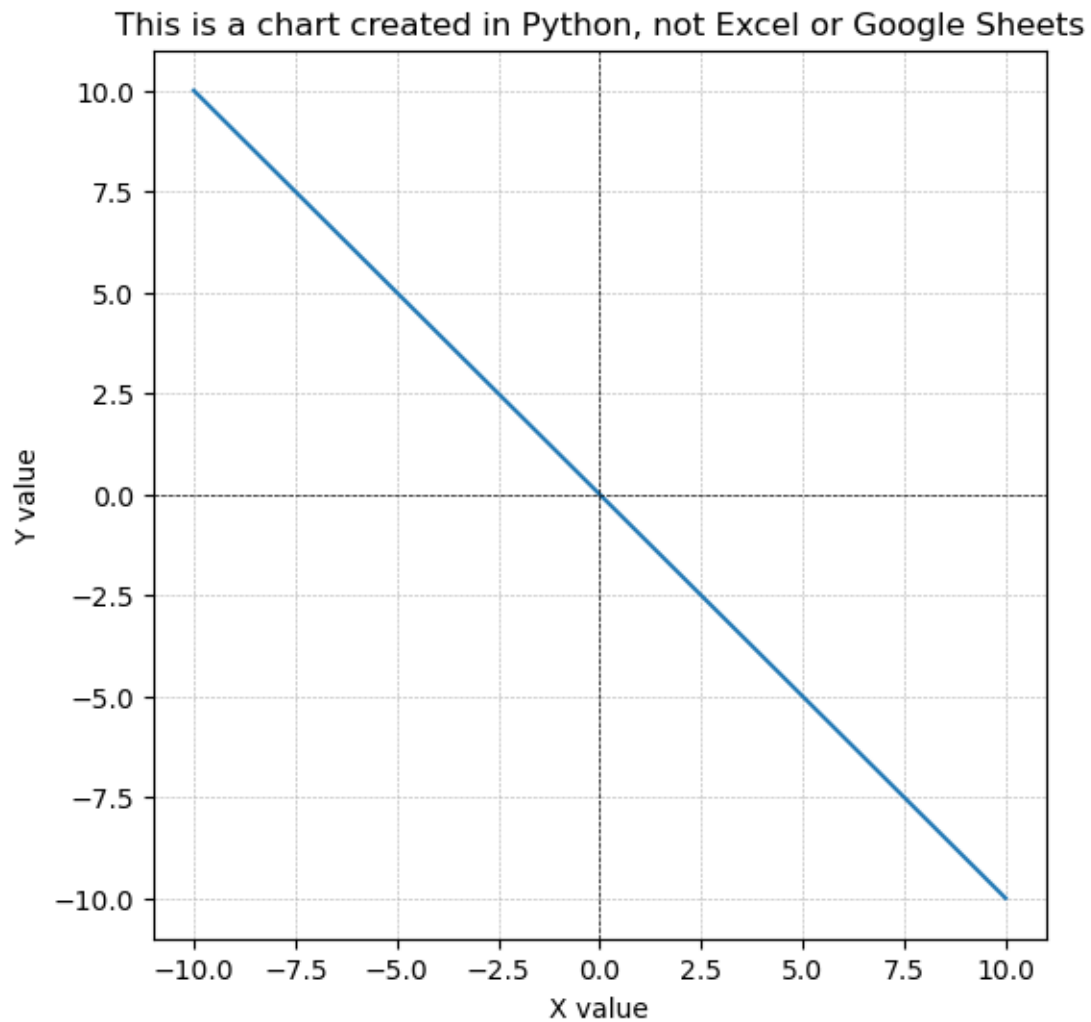
This looks like something created in Excel or Google Sheets, not Python

Step 4: make the chart look pretty

```
[53]: def format_chart(fig, ax, title='a chart', x_title='X value', y_title='Y
      ↪value', size=6):
      ax.set_title(title)
      ax.set_xlabel(x_title)
      ax.set_ylabel(y_title)
      ax.grid(True, which='both', linestyle='--', linewidth=0.4)
      ax.axhline(0, color='black', linestyle='--', linewidth=0.5)
      ax.axvline(0, color='black', linestyle='--', linewidth=0.5)
      fig.set_size_inches(size, size)
```

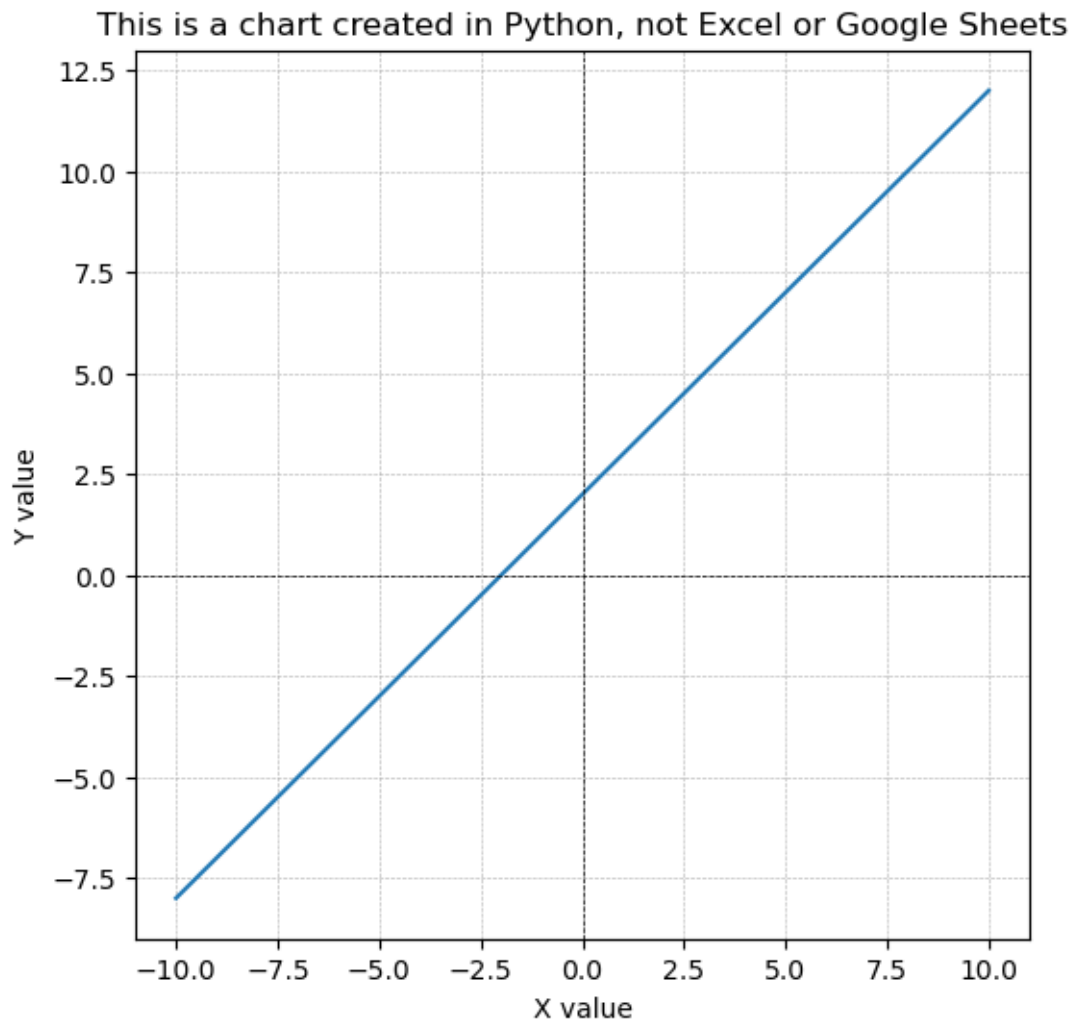
Fignomental

```
[54]: fig, ax = plt.subplots()
      ax.plot(x_list, y_list2)
      format_chart(fig, ax, 'This is a chart created in Python, not Excel or Google
      ↪Sheets')
      plt.show()
```



```
[55]: y_list3 = [i+2 for i in x_list]

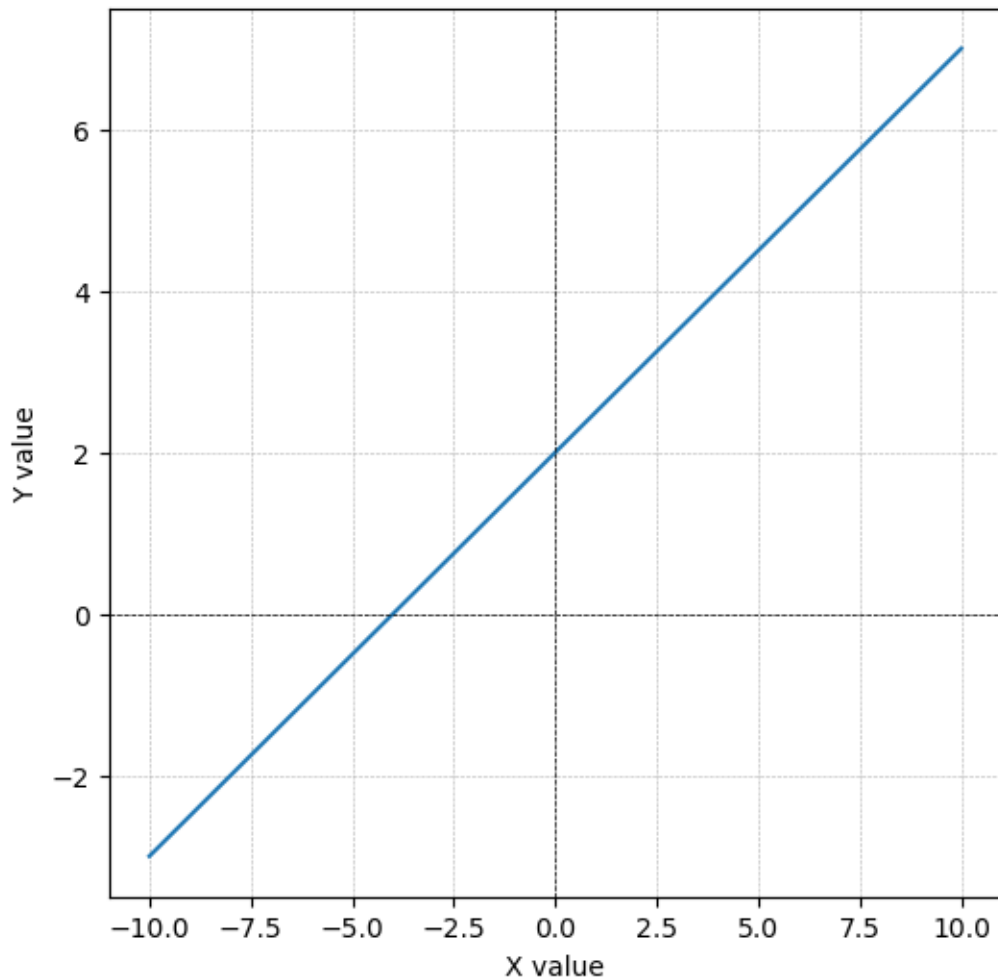
fig, ax = plt.subplots()
ax.plot(x_list, y_list3)
format_chart(fig, ax, 'This is a chart created in Python, not Excel or Google_
↳ Sheets')
plt.show()
```



```
[56]: y_list4 = [(0.5*i)+2 for i in x_list]

fig, ax = plt.subplots()
ax.plot(x_list, y_list4)
format_chart(fig, ax, 'This is a chart created in Python, not Excel or Google_
↳ Sheets')
plt.show()
```

This is a chart created in Python, not Excel or Google Sheets



```
[58]: y_list5 = [-10 + (i**2) for i in x_list]

fig, ax = plt.subplots()
ax.plot(x_list, y_list5)
format_chart(fig, ax, 'This is a chart created in Python, not Excel or Google_
↳ Sheets')
plt.show()
```

This is a chart created in Python, not Excel or Google Sheets

