MatplotlibExercises_Solutions

June 8, 2024

```
[45]: import numpy as np
      x = np.arange(0,100)
      y = x*2
      z = x**2
```

** Import matplotlib.pyplot as plt and set %matplotlib inline if you are using the jupyter notebook. What command do you use if you aren't using the jupyter notebook?**

```
[46]: import matplotlib.pyplot as plt
      %matplotlib inline
      # plt.show() for non-notebook users
```

0.1 Exercise 1

** Follow along with these steps: * Create a figure object called fig using plt.figure() * Use add_axes to add an axis to the figure canvas at [0,0,1,1]. Call this new axis ax. * Plot (x,y) on that axes and set the labels and titles to match the plot below:**

```
[47]: fig = plt.figure()
      ax = fig.add_axes([0,0,1,1])
      ax.plot(x,y)
      ax.set_xlabel('x')
      ax.set_ylabel('y')
      ax.set_title('title')
```
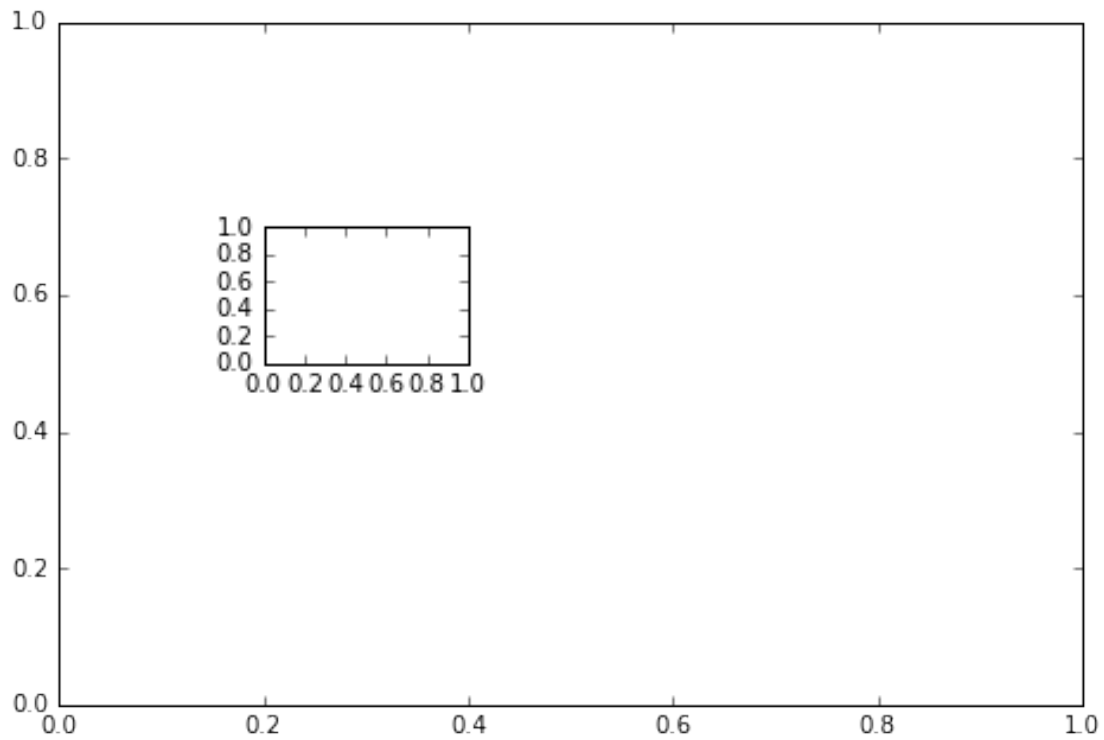
```
[47]: <matplotlib.text.Text at 0x114ce6630>
```
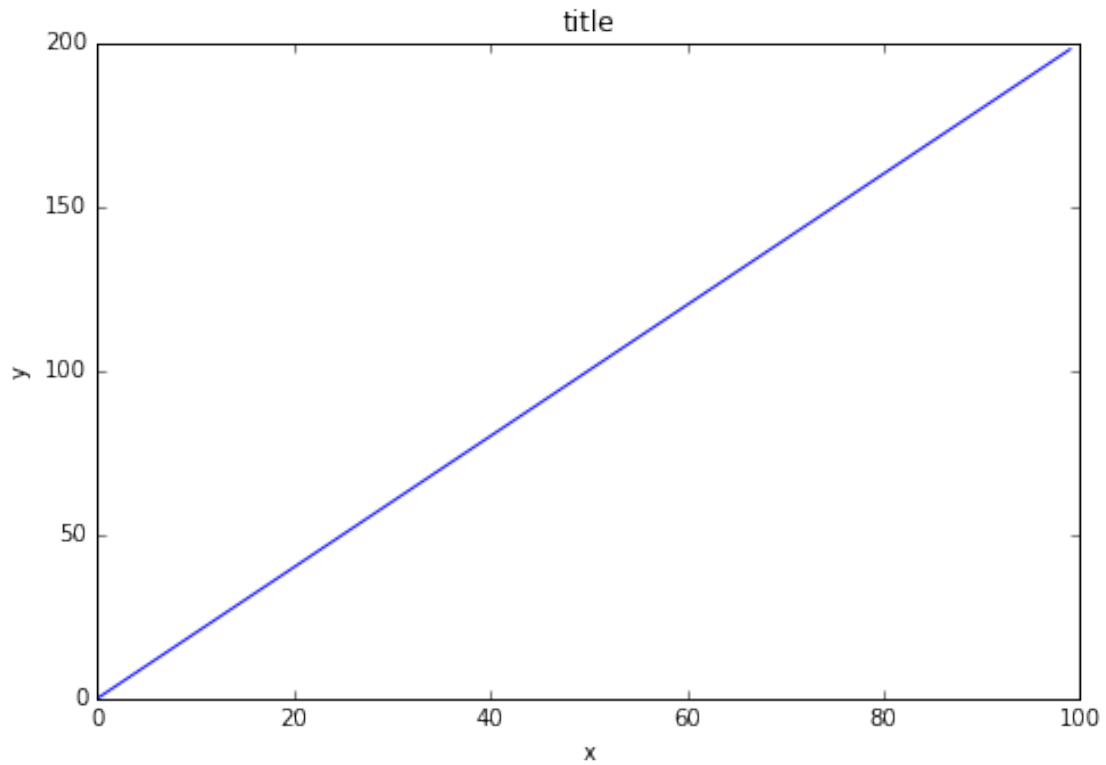
0.2 Exercise 2

** Create a figure object and put two axes on it, ax1 and ax2. Located at [0,0,1,1] and [0.2,0.5,.2,.2] respectively.**

```
[48]: fig = plt.figure()

      ax1 = fig.add_axes([0,0,1,1])
      ax2 = fig.add_axes([0.2,0.5,.2,.2])
```
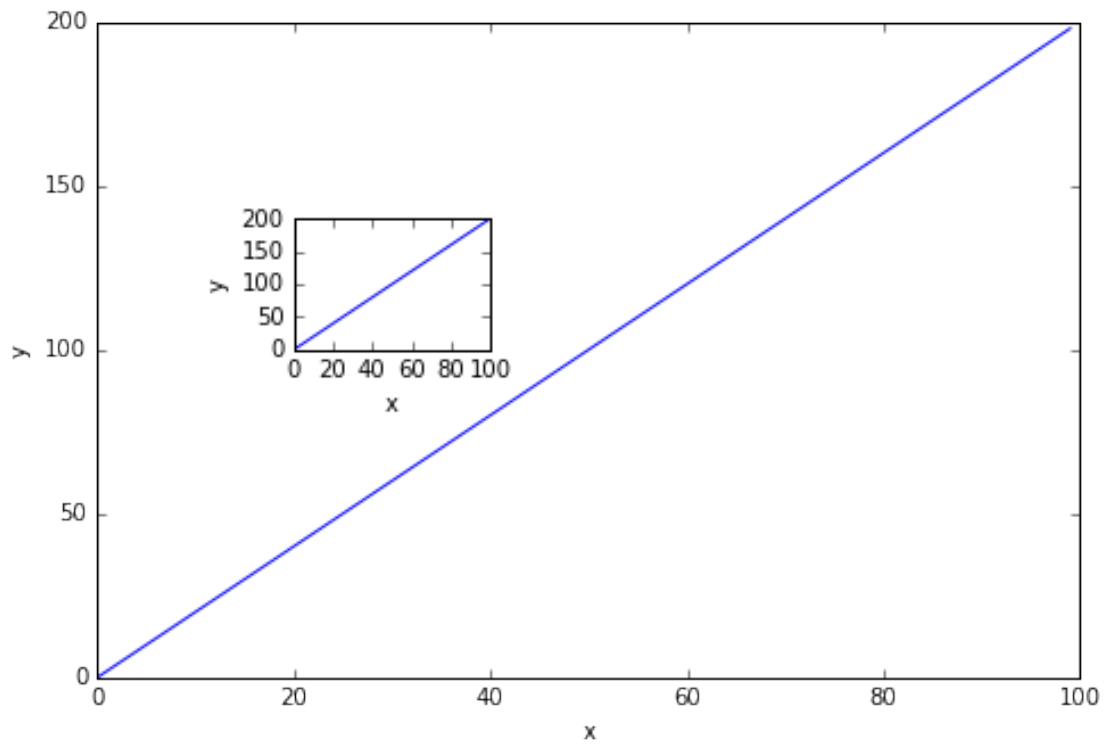
** Now plot (x,y) on both axes. And call your figure object to show it.**

```
[49]: ax1.plot(x,y)
      ax1.set_xlabel('x')
      ax1.set_ylabel('y')


      ax2.plot(x,y)
      ax2.set_xlabel('x')
      ax2.set_ylabel('y')

      fig # Show figure object
```
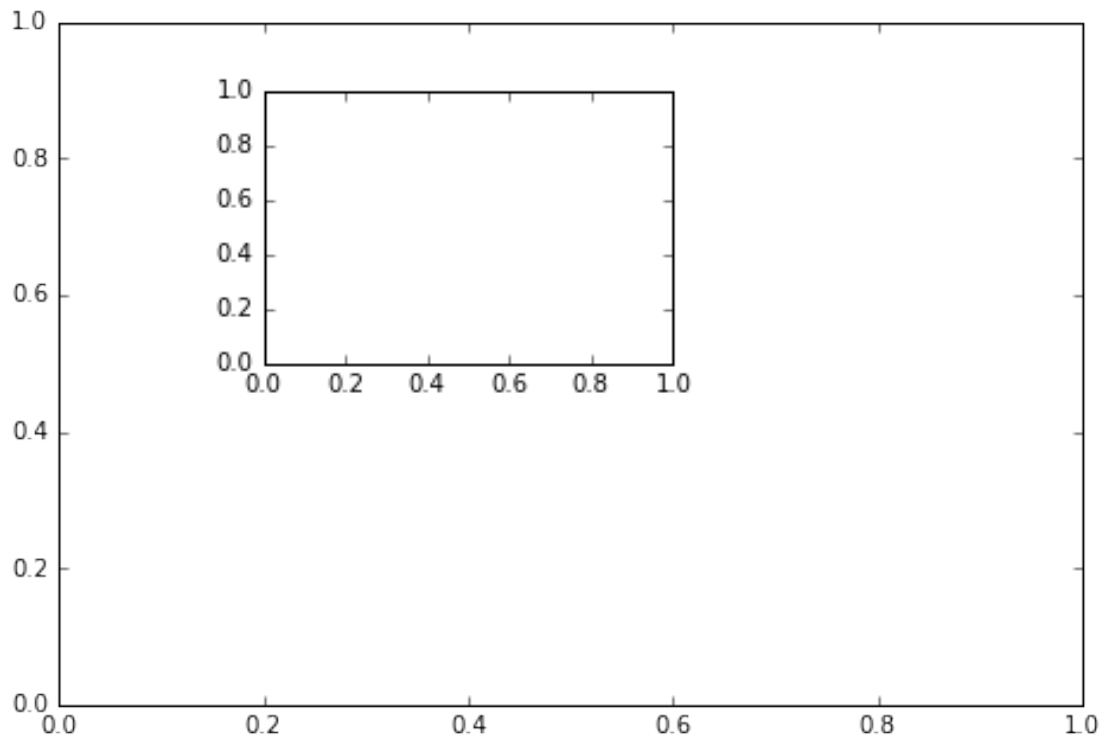
[49]:

0.3   Exercise 3

** Create the plot below by adding two axes to a figure object at [0,0,1,1] and [0.2,0.5,.4,.4]**

```
[50]: fig = plt.figure()

      ax = fig.add_axes([0,0,1,1])
      ax2 = fig.add_axes([0.2,0.5,.4,.4])
```
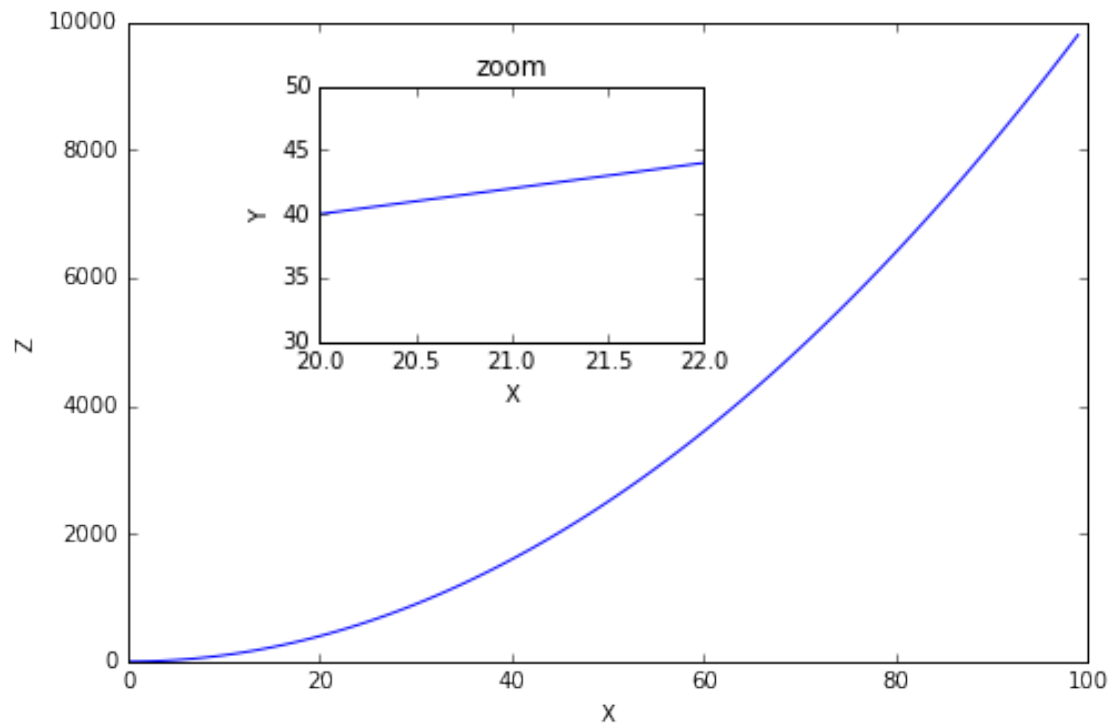
** Now use x,y, and z arrays to recreate the plot below. Notice the xlimits and y limits on the inserted plot:**

[51]:
```
ax.plot(x,z)
ax.set_xlabel('X')
ax.set_ylabel('Z')


ax2.plot(x,y)
ax2.set_xlabel('X')
ax2.set_ylabel('Y')
ax2.set_title('zoom')
ax2.set_xlim(20,22)
ax2.set_ylim(30,50)

fig
```
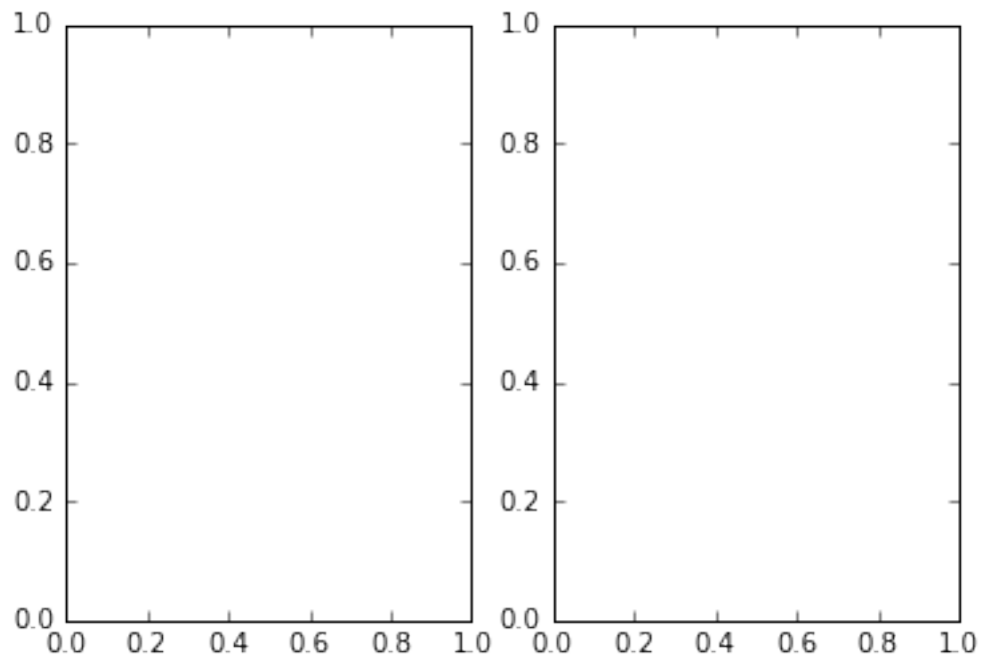
[51]:

0.4 Exercise 4

** Use plt.subplots(nrows=1, ncols=2) to create the plot below.**
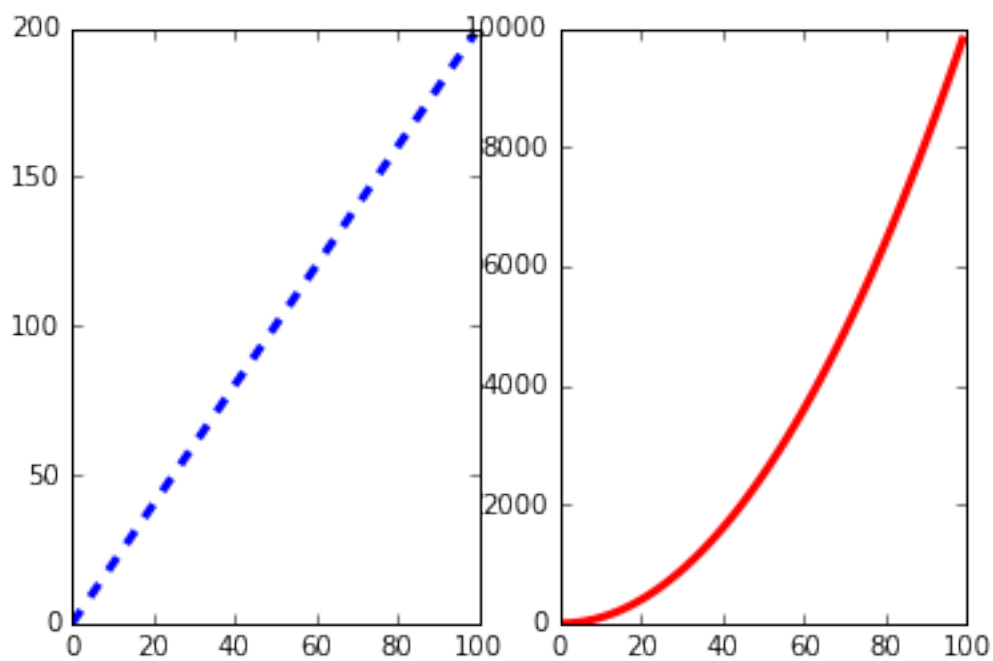
```
[52]: # Empty canvas of 1 by 2 subplots
      fig, axes = plt.subplots(nrows=1, ncols=2)
```

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** Now plot (x,y) and (x,z) on the axes. Play around with the linewidth and style**

```
[53]: axes[0].plot(x,y,color="blue", lw=3, ls='--')
      axes[1].plot(x,z,color="red", lw=3, ls='-')
      fig
```

[53]:

** See if you can resize the plot by adding the figsize() argument in plt.subplots() are copying and pasting your previous code.**

```
[54]: fig, axes = plt.subplots(nrows=1, ncols=2,figsize=(12,2))

      axes[0].plot(x,y,color="blue", lw=5)
      axes[0].set_xlabel('x')
      axes[0].set_ylabel('y')

      axes[1].plot(x,z,color="red", lw=3, ls='--')
      axes[1].set_xlabel('x')
      axes[1].set_ylabel('z')
```

[54]: <matplotlib.text.Text at 0x115847da0>