matplotlib

```python
import matplotlib.pyplot as plt
%matplotlib inline

plt.plot(x, y)
plt.xlabel('X Axis Title Here')
plt.ylabel('Y Axis Title Here')
plt.title('String Title Here')
plt.xlim(0,6) # Lower Limit, Upper Limit
plt.ylim(0,12) # Lower Limit, Upper Limit
plt.show() # Required for non-jupyter users , but also removes Out[] info

plt.plot(x,y)
plt.savefig('example.png')
```

Matplotlib Figure Object

```python
# Creates blank canvas
fig = plt.figure()
axes1 = fig.add_axes([0, 0, 1, 1]) # Large figure
axes2 = fig.add_axes([0.2, 0.5, 0.25, 0.25]) # Smaller figure
# Larger Figure Axes 1
axes1.plot(a, b)
# Use set_ to add to the axes figure
axes1.set_xlabel('X Label')
axes1.set_ylabel('Y Label')
axes1.set_title('Big Figure')
# Insert Figure Axes 2
axes2.plot(a,b)
axes2.set_xlim(8,10)
axes2.set_ylim(4000,10000)
axes2.set_xlabel('X')
axes2.set_ylabel('Y')
axes2.set_title('Zoomed In')
fig.savefig('figure.png',bbox_inches='tight')

fig = plt.figure(figsize=(12,8),dpi=100)
axes1 = fig.add_axes([0, 0, 1, 1])
axes1.plot(a,b)
```

plt.subplots()

```python
# NOTE! This returns 2 dimensional array
fig,axes = plt.subplots(nrows=2,ncols=2,figsize=(12,8))
axes[0][0].plot(a,b)
axes[1][1].plot(x,y)
axes[0][1].plot(y,x)
axes[1][0].plot(b,a)
```

```
plt.tight_layout()
fig.savefig('subplots.png',bbox_inches='tight')
plt.show()
```

```
fig, axes = plt.subplots(figsize=(12,6))
axes.plot(x, x-1, color="green", lw=3, linestyle='-',label='x-1') # solid
axes.plot(x, x-2, color="blue", lw=4, ls='-.',label='x-2') # dash and dot
axes.plot(x, x-3, color="orange", lw=5, ls=':',label='x-3') # dots
axes.plot(x, x-4, color="black", lw=6, ls='--',label='x-4') # dashes
axes.legend(loc=(1.1,0.5)) # manually set location
```