

# Subplots

## Subplots

You can create subplots in two different ways:

### `fig.add_subplot()`

One way to add subplots is by creating a figure and calling the `fig.add_subplot()` method to add an axis to it with (one of) the call signature:

`fig.add_subplot(nrows, ncols, index)`

where `nrows` and `ncols` are the total number of rows and columns of axis and `index` is the position on the grid of axis.

Consider the plot with two rows and a single column:

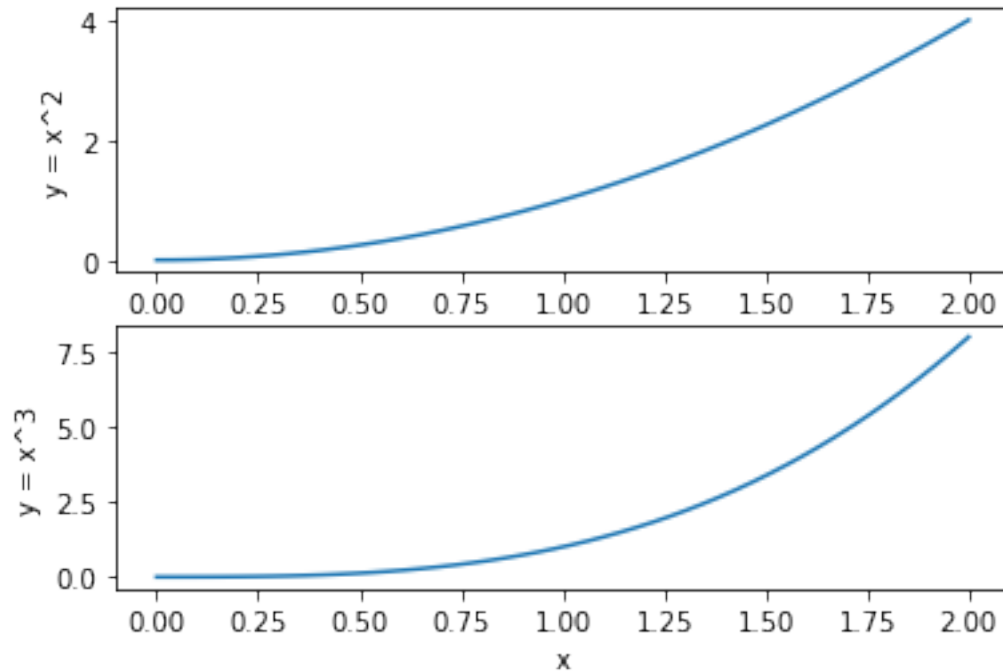
```
[6]: x = np.linspace(0, 2)

fig = plt.figure()

#Top axis
ax0 = fig.add_subplot(2, 1, 1)
ax0.plot(x, x**2)
ax0.set_xlabel('x') #Note `set_xlabel` instead of `xlabel`
ax0.set_ylabel('y = x^2')

#Bottom axis
ax1 = fig.add_subplot(2, 1, 2)
ax1.plot(x, x*x*x)
ax1.set_xlabel('x')
ax1.set_ylabel('y = x^3')

plt.show()
```



Refer to the [documentation](#) for additional options.

### `plt.subplots()`

An alternative way to create subplots is to use the `plt.subplots()` function which returns the figure object and a tuple of axis. The call signature is:

```
plt.subplots(nrows = 1, ncols = 1)
```

where `nrows` and `ncols` are the number of rows and columns as before.

Let's recreate the previous plot using this function:

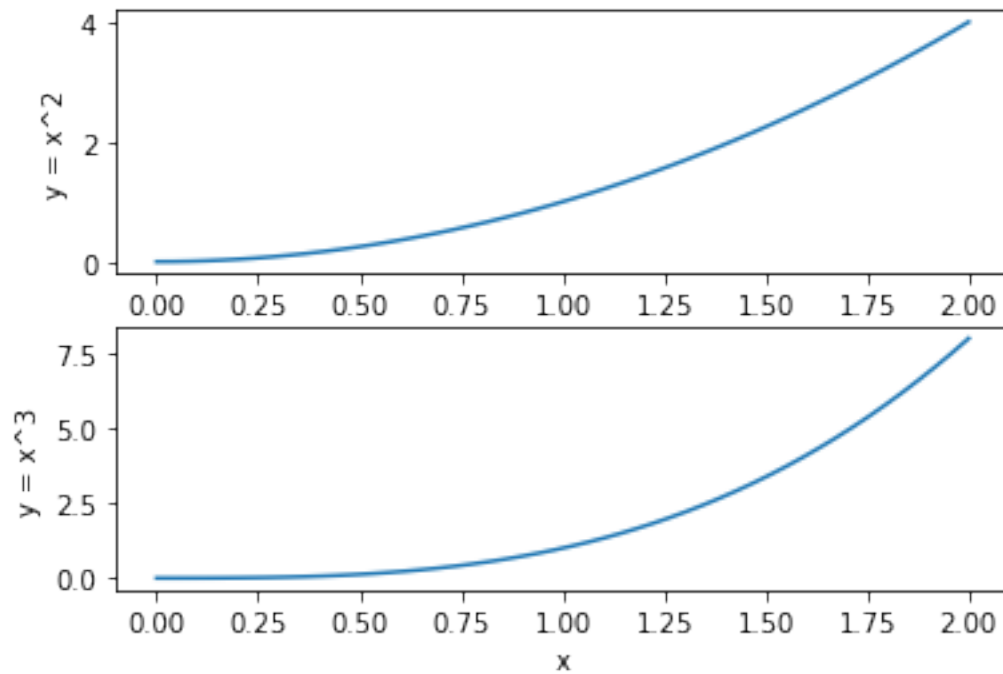
```
[7]: x = np.linspace(0, 2)

fig, ax = plt.subplots(2, 1)

#Top axis
ax[0].plot(x, x**2)
ax[0].set_xlabel('x') #Note `set_xlabel` instead of `xlabel`
ax[0].set_ylabel('y = x^2')

#Bottom axis
ax[1].plot(x, x*x*x)
ax[1].set_xlabel('x')
ax[1].set_ylabel('y = x^3')
```

```
plt.show()
```



A couple of additional keyword arguments are **sharex** and **sharey**. These take boolean values. If true the subplots will share the relevant axis's ticks. For example:

```
[11]: x = np.linspace(0, np.pi)

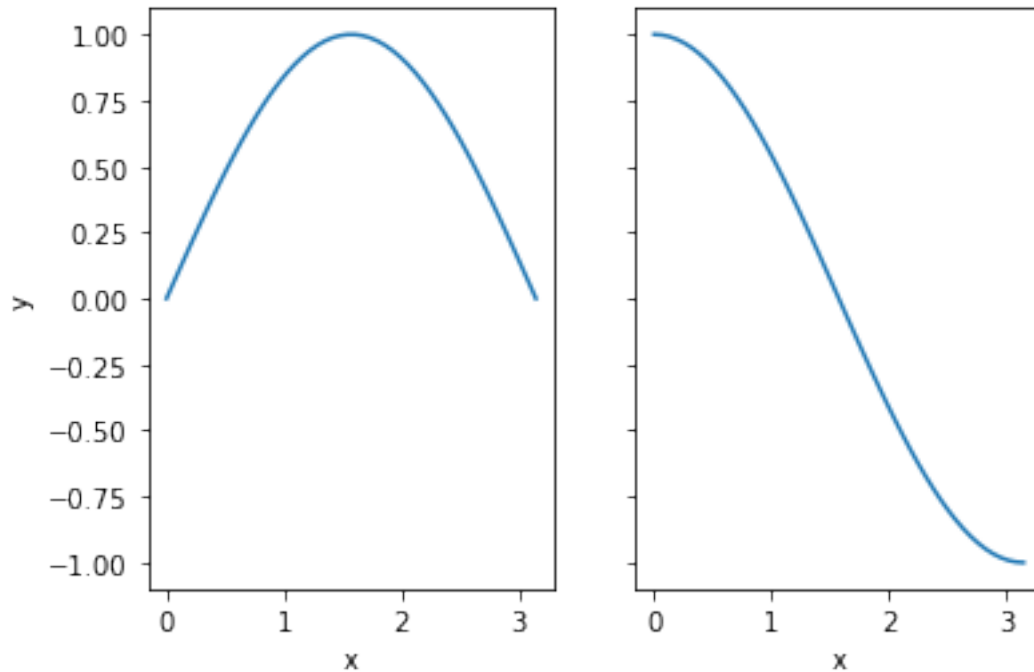
fig, ax = plt.subplots(1, 2, sharey = True)

ax[0].plot(x, np.sin(x))
ax[0].set_xlabel('x')

ax[1].plot(x, np.cos(x))
ax[1].set_xlabel('x')

ax[0].set_ylabel('y') #You can set this for the other axis

plt.show()
```



Refer to the [documentation](#) for additional options.

## Using Subplots For General Plots

The subplot functions above are also used in general practice to create single axis plots, due to the ability to create a reference to the axis, which grants further customization. Simply:

```
[12]: fig = plt.figure()
      ax = fig.add_subplot()

      ax.plot(np.linspace(0, 10))
      ax.set_xlabel('x')
      ax.set_ylabel('y')

      plt.show()
```

