

In [1]:

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

In [2]:

x

Out[2]:

```
array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16,
        17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33,
        34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50,
        51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67,
        68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84,
        85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99])
```

In [3]:

y

Out[3]:

```
array([ 0,  2,  4,  6,  8, 10, 12, 14, 16, 18, 20, 22, 24,
        26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50,
        52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76,
        78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102,
        104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128,
        130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154,
        156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180,
        182, 184, 186, 188, 190, 192, 194, 196, 198])
```

In [4]:

z

Out[4]:

```
array([ 0,  1,  4,  9, 16, 25, 36, 49, 64, 81, 100,
        121, 144, 169, 196, 225, 256, 289, 324, 361, 400, 441,
        484, 529, 576, 625, 676, 729, 784, 841, 900, 961, 1024,
        1089, 1156, 1225, 1296, 1369, 1444, 1521, 1600, 1681, 1764, 1849,
        1936, 2025, 2116, 2209, 2304, 2401, 2500, 2601, 2704, 2809, 2916,
        3025, 3136, 3249, 3364, 3481, 3600, 3721, 3844, 3969, 4096, 4225,
        4356, 4489, 4624, 4761, 4900, 5041, 5184, 5329, 5476, 5625, 5776,
        5929, 6084, 6241, 6400, 6561, 6724, 6889, 7056, 7225, 7396, 7569,
        7744, 7921, 8100, 8281, 8464, 8649, 8836, 9025, 9216, 9409, 9604,
        9801])
```

In [5]:

```
import matplotlib.pyplot as plt
```

In [6]:

```
%matplotlib inline
```

Exercise 1:

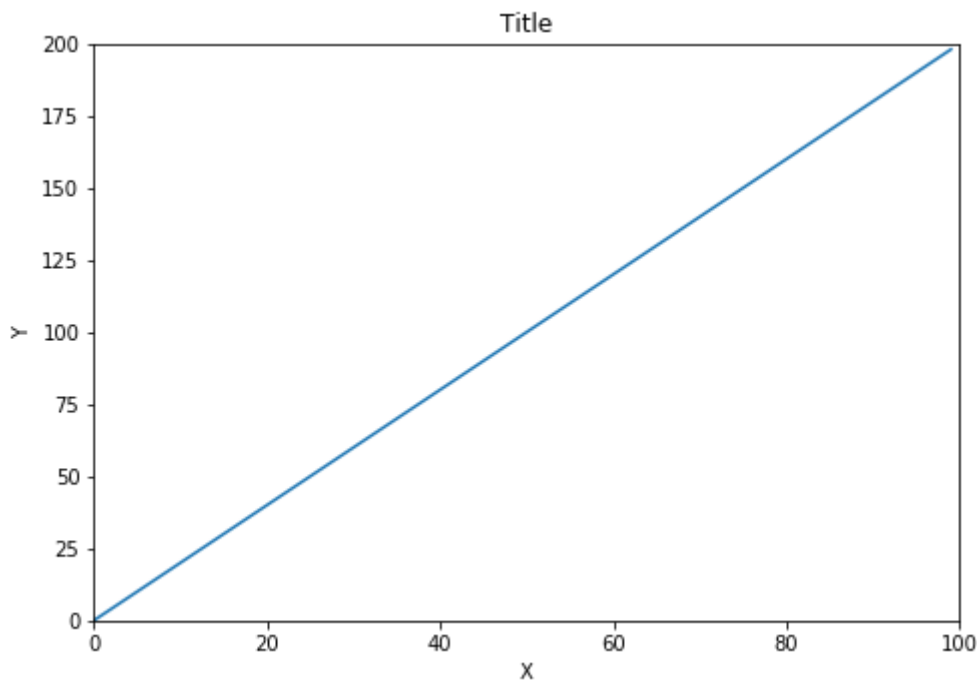
Create a figure object `fig` using `plt.figure()`

Use `add_axes` to add an axis to the figure canvas as `[0,0,1,1]`. Call the new axes as `ax`.

Plot `(x,y)` on that axes and set the labels and titles to match the plot below:

In [7]:

```
fig = plt.figure()
ax = fig.add_axes([0,0,1,1])
ax.set_xlabel('X')
ax.set_ylabel('Y')
ax.set_title('Title')
ax.set_xlim(right=100)
ax.set_ylim(top=200)
ax.plot(x,y);
```

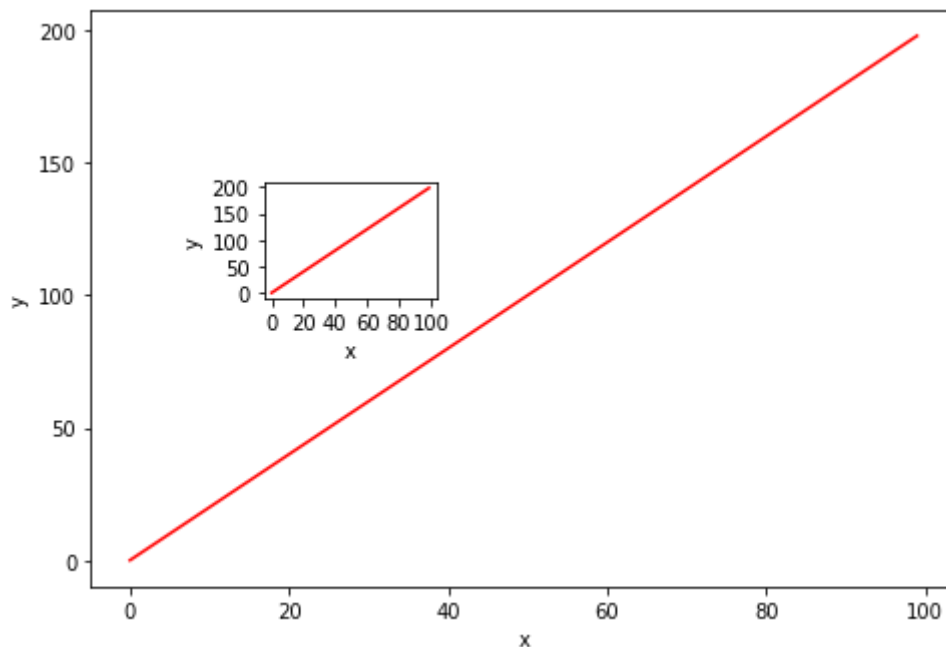


Exercise 2: Create a figure object and put two axes on it, `ax1` and `ax2`. Locate at `[0,0,1,1]` and `[.2,.5,.2,.2]` respectively.

In [8]:

```
fig = plt.figure()
ax1 = fig.add_axes([0,0,1,1])
ax1.set_xlabel('x')
ax1.set_ylabel('y')
ax1.set_xbound(0,100)
ax1.set_ybound(0,200)
ax1.set_xticks([0,20,40,60,80,100])
ax1.set_yticks([0,50,100,150,200])
ax1.plot(x,y,'r')

ax2 = fig.add_axes([.2,.5,.2,.2])
ax2.set_xlabel('x')
ax2.set_ylabel('y')
ax2.set_xbound(0,100)
ax2.set_ybound(0,200)
ax2.set_xticks([0,20,40,60,80,100])
ax2.set_yticks([0,50,100,150,200])
ax2.plot(x,y,'r');
```

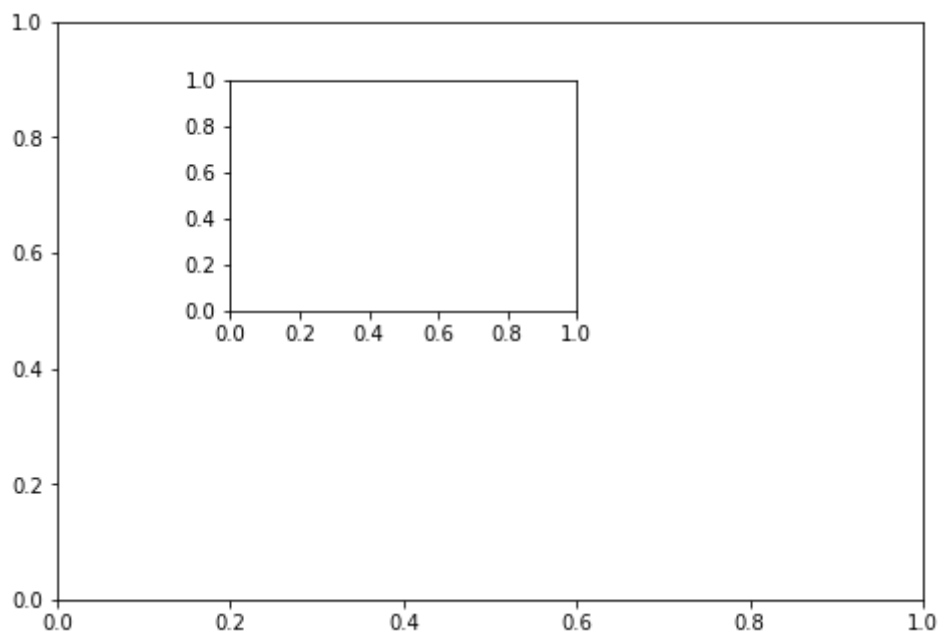


Exercise 3:

Create a plot below by creating two axes to a figure object at [0,0,1,1] and [.2,.5,.4,.4] respectively. Now use x,y,z arrays to recreate the plot below. Notice the xlims and ylims on the inserted plot.

In [9]:

```
fig = plt.figure()  
ax1 = fig.add_axes([0,0,1,1])  
ax2 = fig.add_axes([.2,.5,.4,.4])
```

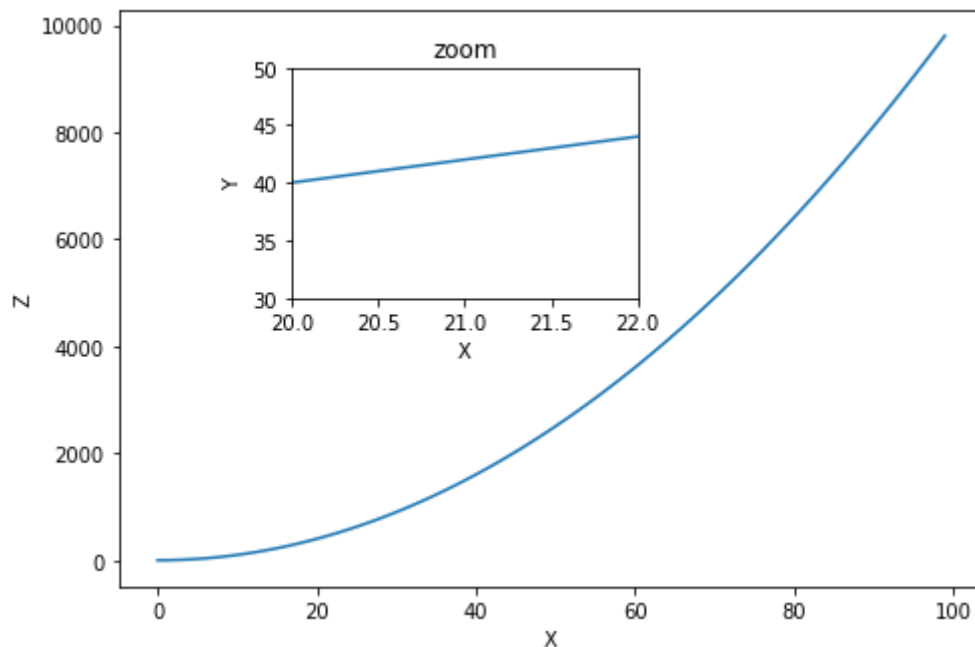


In [10]:

```
fig = plt.figure()
ax1 = fig.add_axes([0,0,1,1])
ax1.set_xlabel('X')
ax1.set_ylabel('Z')
ax1.set_xbound(0,100)
ax1.set_ybound(0,10000)
ax1.set_xticks([0,20,40,60,80,100],minor = False)
ax1.set_yticks([0,2000,4000,6000,8000,10000],minor = False)
ax1.plot(x,z)

ax2 = fig.add_axes([.2,.5,.4,.4])
ax2.set_xlabel('X')
ax2.set_ylabel('Y')
ax2.set_xlim(20,22)
ax2.set_ylim(30,50)
ax2.margins(.5,5)

ax2.set_title('zoom')
ax2.plot(x,y);
```



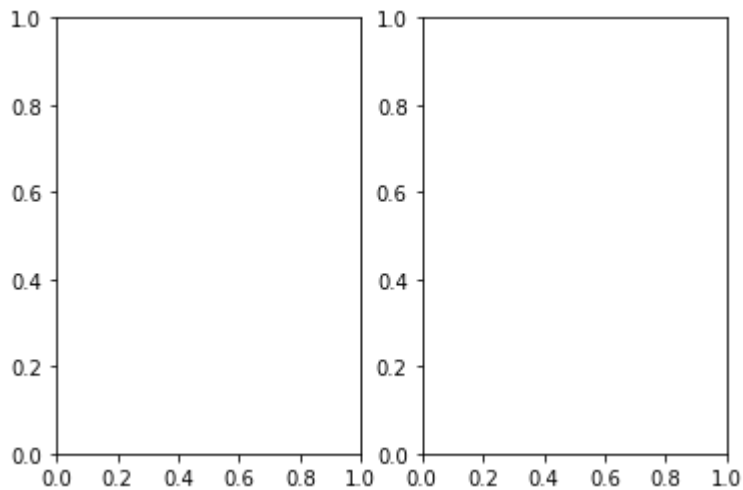
Exercise 4 :

Use `plt.subplots(nrows=1,ncols=2)` to create the below plot.

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

In [11]:

```
fig , axes = plt.subplots(nrows=1,ncols=2)
```

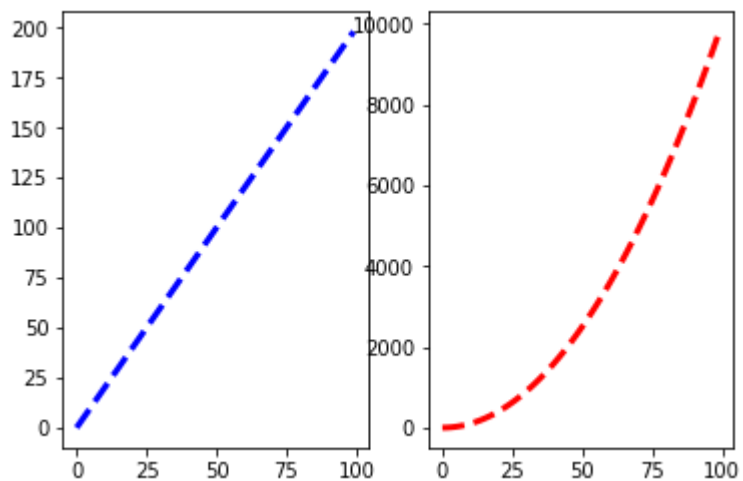


In [22]:

```
fig, axes = plt.subplots(nrows=1, ncols=2)
axes[0].plot(x,y,color="blue", lw=3,ls='--')
axes[1].plot(x,z,color="red", lw=3, ls='--')
```

Out[22]:

[<matplotlib.lines.Line2D at 0x1dadef16588>]

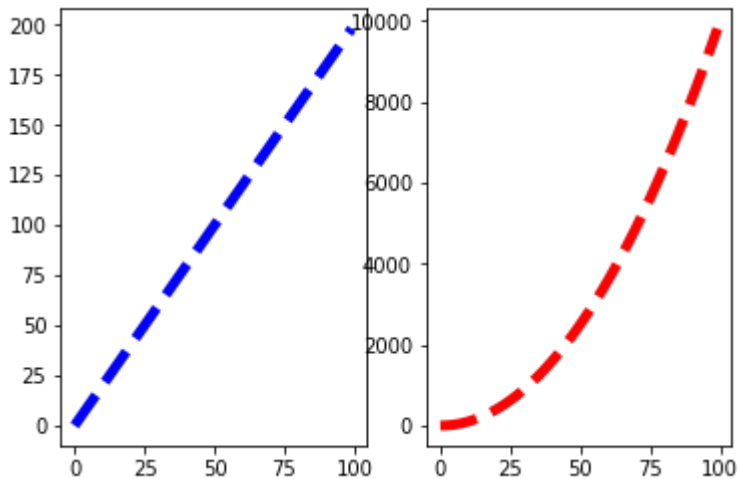


In [23]:

```
fig, axes = plt.subplots(nrows=1, ncols=2)
axes[0].plot(x,y,color="blue", lw=5,ls='--')
axes[1].plot(x,z,color="red", lw=5, ls='--')
```

Out[23]:

[<matplotlib.lines.Line2D at 0x1dade7e8d0>]



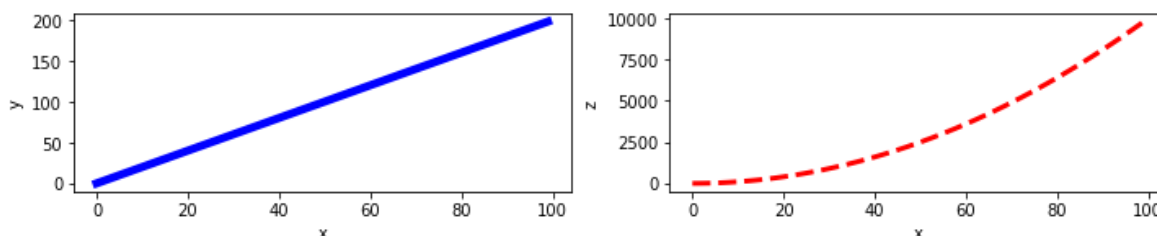
See if you can resize the plot by adding figsize rgument in plt.subplots() by copy and pase your previous code.

In [24]:

```
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')
```

Out[24]:

Text(0,0.5,'z')



In []:

