MATPLOTLIB BY MR. P SOLVER

Video link: https://youtu.be/cTJBJH8hacc (https://youtu.be/cTJBJH8hacc)

Codes: Click Here (https://www.youtube.com/redirect?event=video_description&redir_token=QUFFLUhqbkJvTnZNb3F5b2daM1BxdzRjUkhuNjhLbFNrUXxBQ3

In [1]:

```
import numpy as np
import matplotlib.pyplot as plt
```

If one has SciencePlots (https://github.com/garrettj403/SciencePlots (https://github.com/garrettj403/SciencePlots)) installed has additional options for matplotlib

In [ ]:

```
```

Quick plotting

Line plots

In [2]:

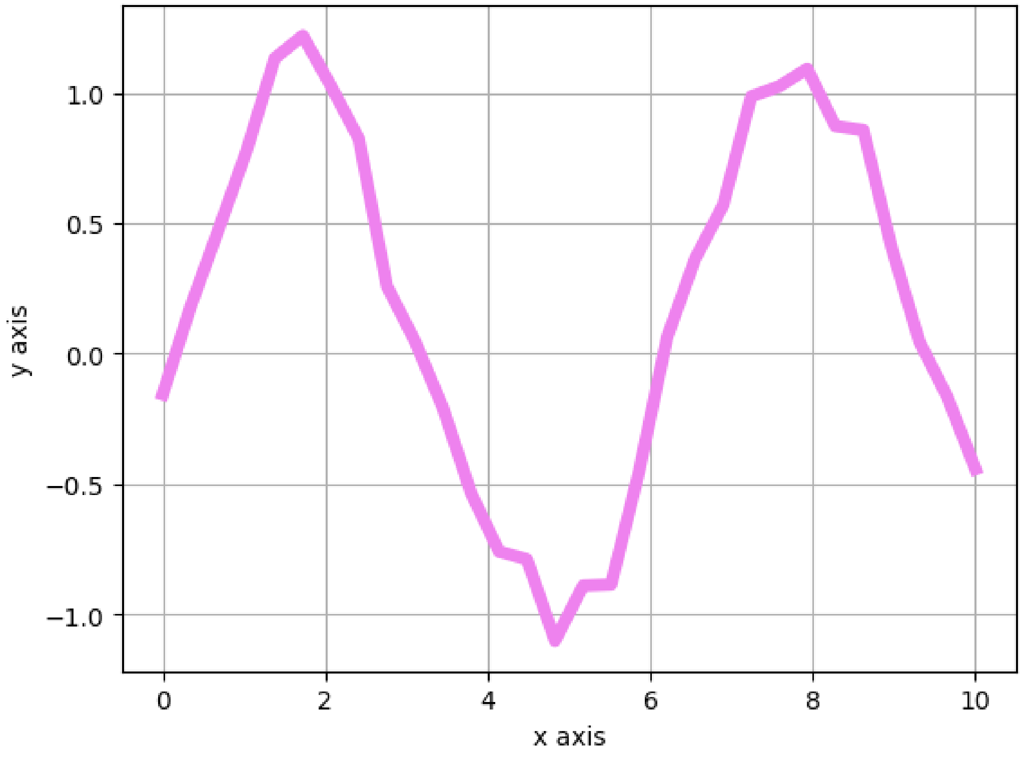
```
x1 = np.linspace(0,10,30)
y1 = np.sin(x1) + 0.1*np.random.randn(len(x1))
```

In [3]:

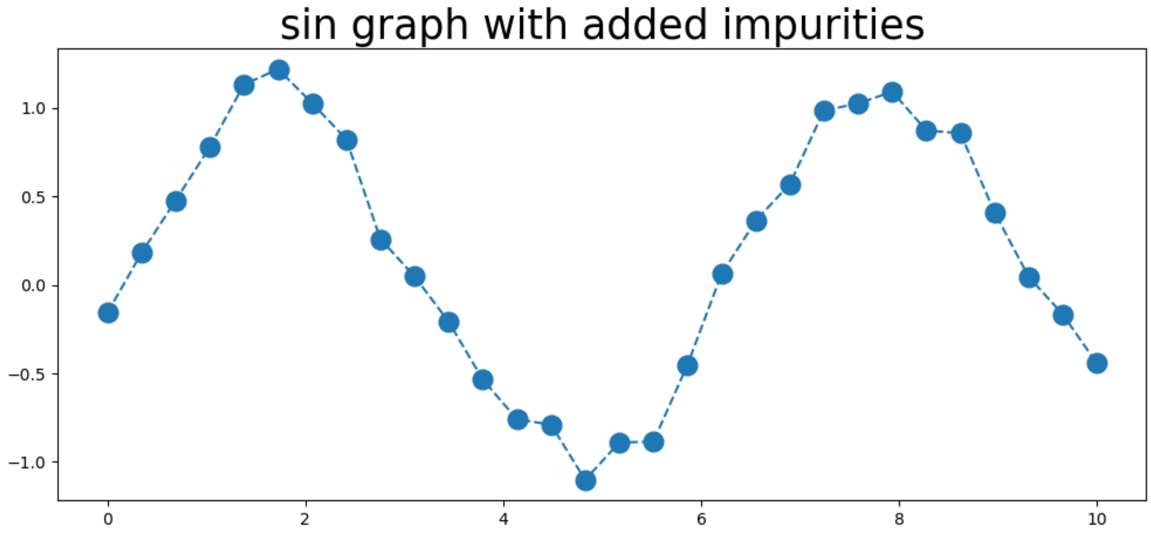
```
plt.plot(x1,y1, color='violet', lw= 5)
plt.grid()
plt.xlabel('x axis')
plt.ylabel('y axis')
```

Out[3]:

```
Text(0, 0.5, 'y axis')
```

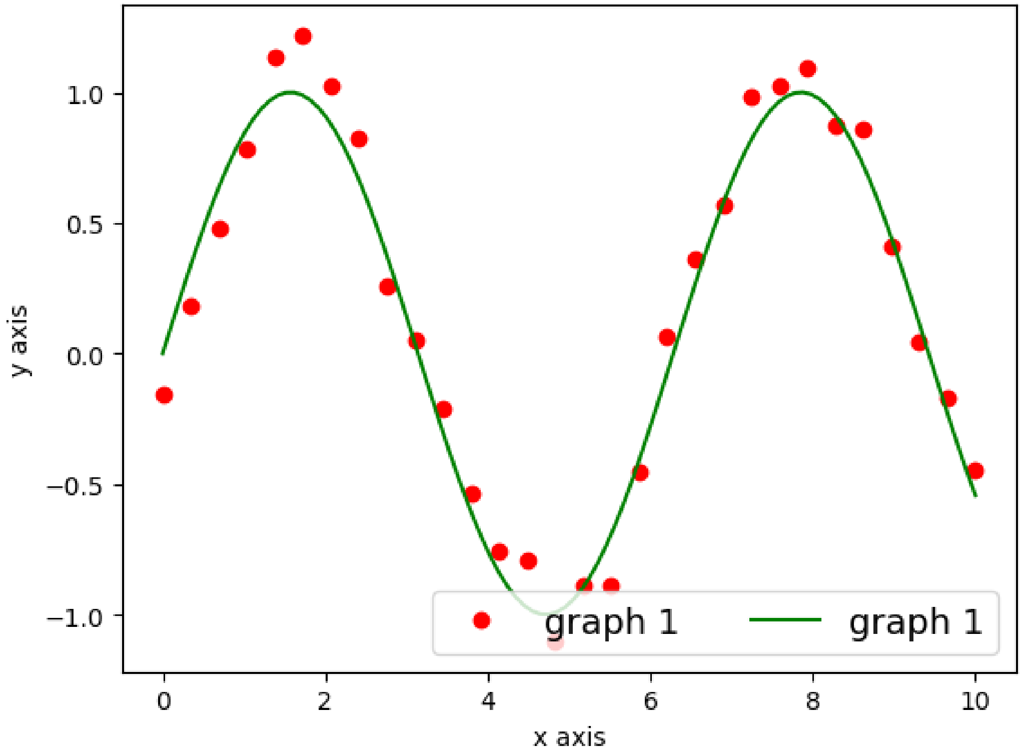


```
In [4]: plt.figure(figsize=(12,5))
        plt.title('sin graph with added impurities', fontsize= 25)
        plt.plot(x1,y1,'o--', ms= 12)

Out[4]: [<matplotlib.lines.Line2D at 0x1c4d1f8fe80>]
```



```
In [5]: x2 = np.linspace(0,10,100)
        y2 = np.sin(x2)
```

```
In [6]: plt.plot(x1,y1,'o', color='red', label='graph 1')
        plt.plot(x2,y2,'-', color='green', label='graph 1')
        plt.xlabel('x axis')
        plt.ylabel('y axis')
        plt.legend(loc= 'lower right', fontsize= 14, ncol=2)

Out[6]: <matplotlib.legend.Legend at 0x1c4d1dfd8e0>
```



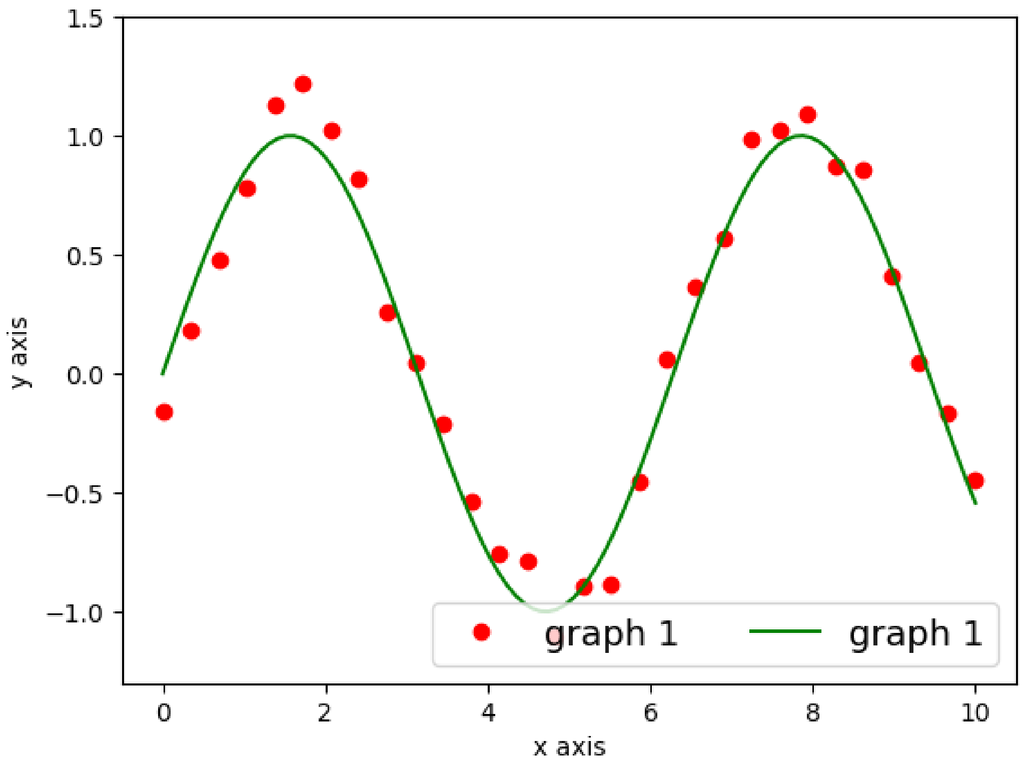
x and y limits

In [7]:

```
plt.plot(x1,y1,'o', color='red', label='graph 1')
plt.plot(x2,y2,'-', color='green', label='graph 1')
plt.xlabel('x axis')
plt.ylabel('y axis')
plt.ylim(bottom=-1.3, top=1.5)
plt.legend(loc= 'lower right', fontsize= 14, ncol=2)
```

Out[7]:

```
<matplotlib.legend.Legend at 0x1c4d1dcbc10>
```



Histograms

Do it later. (if needed)

A more advanced API

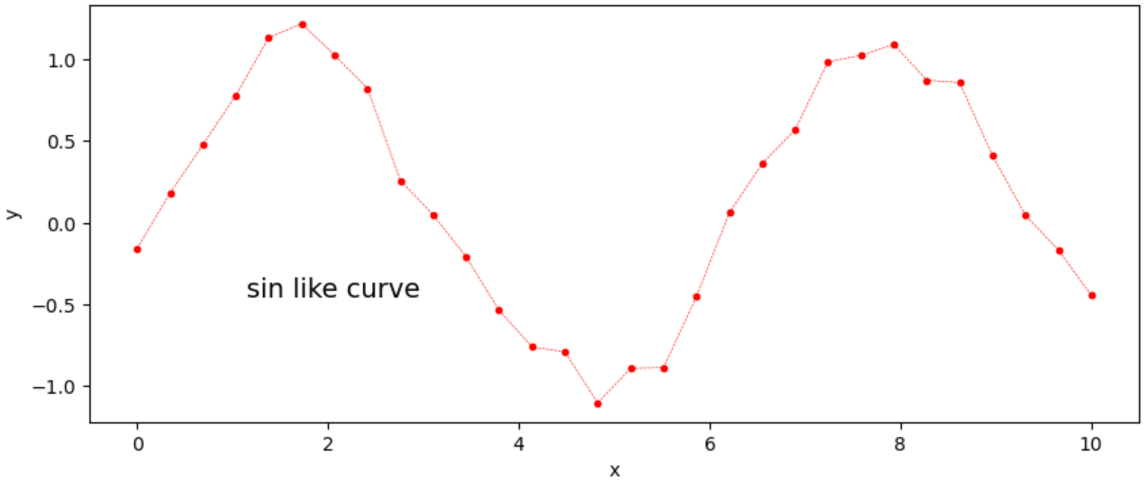
For more complicated plots, such as

Multiple subplots on 1 figure Conveniently adding text to plots Creating animations one needs to use a slightly more advanced API

Single axis in a figure

In [8]:

```
fig, ax = plt.subplots(1,1, figsize=(10,4))
ax.plot(x1, y1, 'o--', color='r', lw=0.4, ms=3)
ax.text(0.15,0.3, 'sin like curve', fontsize=14, transform=ax.transAxes)
ax.set_xlabel('x')
ax.set_ylabel('y')
plt.show()
```

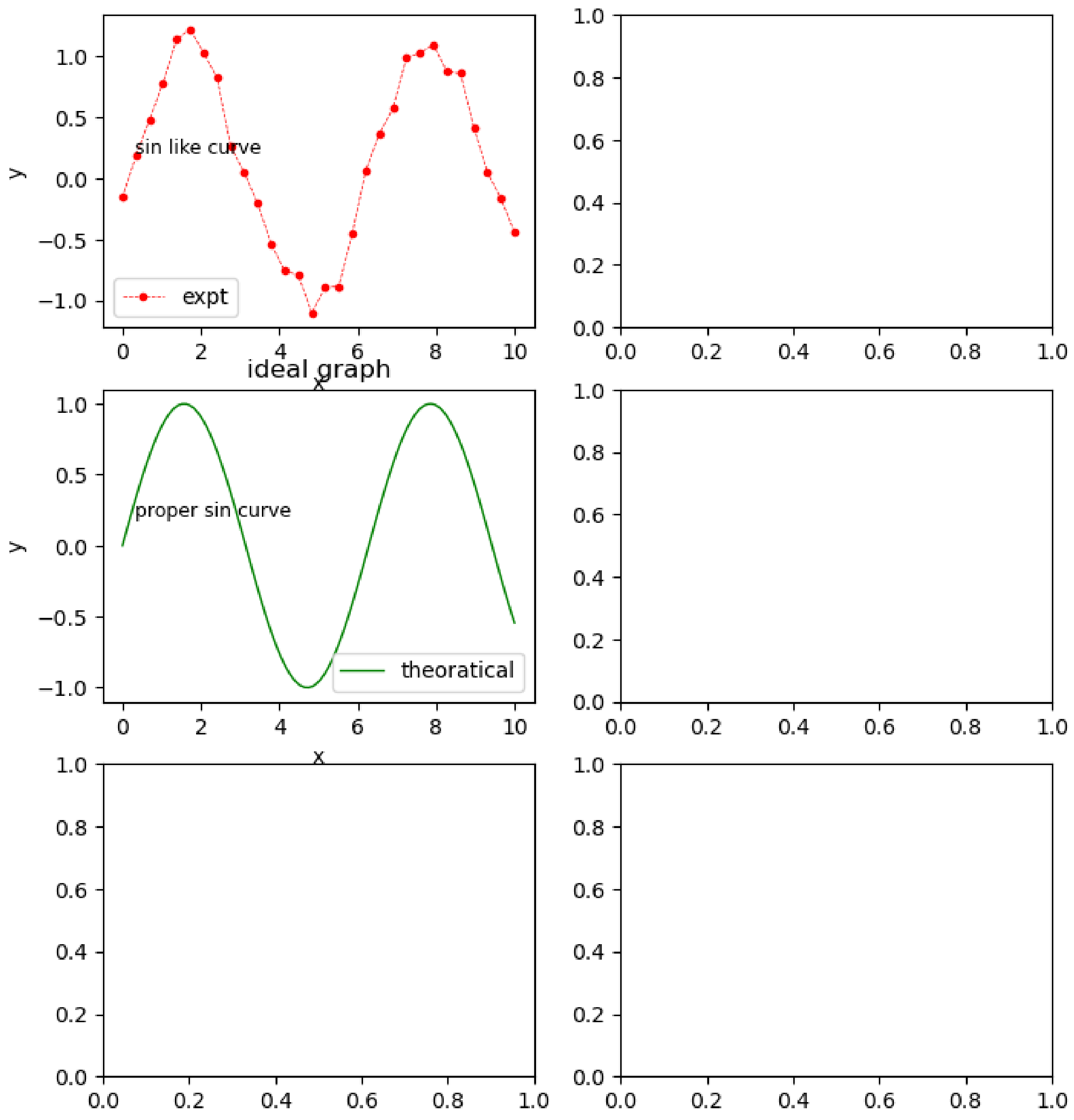


In [ ]:

```
```

Multiple axis in a figure

In [9]:
```
fig, axes = plt.subplots(3,2, figsize=(8,9))
ax = axes[0][0]
ax.plot(x1, y1, 'o--', color='r', lw=0.5, ms=3, label='expt')
ax.text(0.3,0.2, 'sin like curve', fontsize=9)
ax.legend()
ax.set_xlabel('x')
ax.set_ylabel('y')
ax = axes[1][0]
ax.plot(x2, y2, color='g', lw=1, ms=3, label='theoratical')
ax.text(0.3,0.2, 'proper sin curve', fontsize=9)
ax.set_title('ideal graph')
ax.legend()
ax.set_xlabel('x')
ax.set_ylabel('y')
plt.show()
```



In [10]:
```
axes
```

Out[10]:
```
array([[<AxesSubplot:xlabel='x', ylabel='y'>, <AxesSubplot:>],
       [<AxesSubplot:title={'center':'ideal graph'}, xlabel='x', ylabel='y'>,
        <AxesSubplot:>],
       [<AxesSubplot:>, <AxesSubplot:>]], dtype=object)
```

Example

In [ ]: