

## ✓ Gráficos no Python - Matplotlib.pyplot

Para ter acesso a documentação desta biblioteca: <https://matplotlib.org/stable/tutorials/introductory/pyplot.html>

### Instalação

No caso do Anaconda (Jupyter) o Matplotlib já está instalado.

Não sabe se está instalado ou não? Use o comando pip freeze no prompt de comando

Use pip install -U matplotlib no prompt do Anaconda para atualizar para a versão mais recente

### ✓ Importação

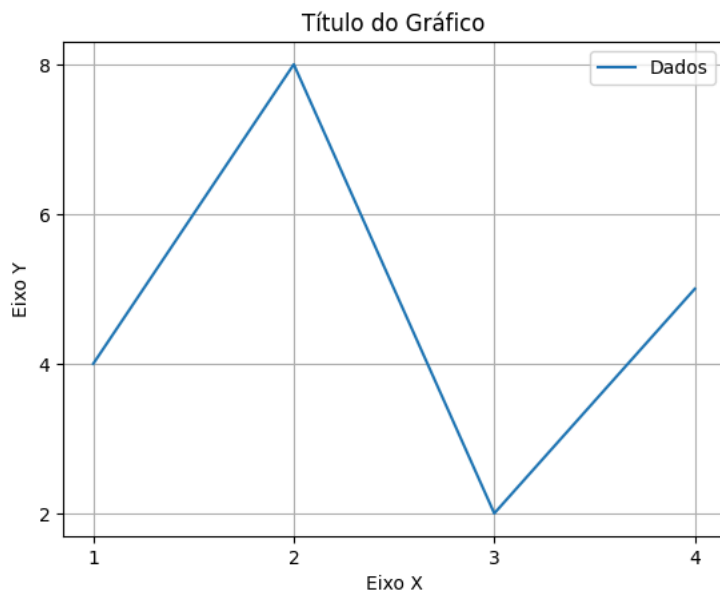
```
import matplotlib.pyplot as plt
```

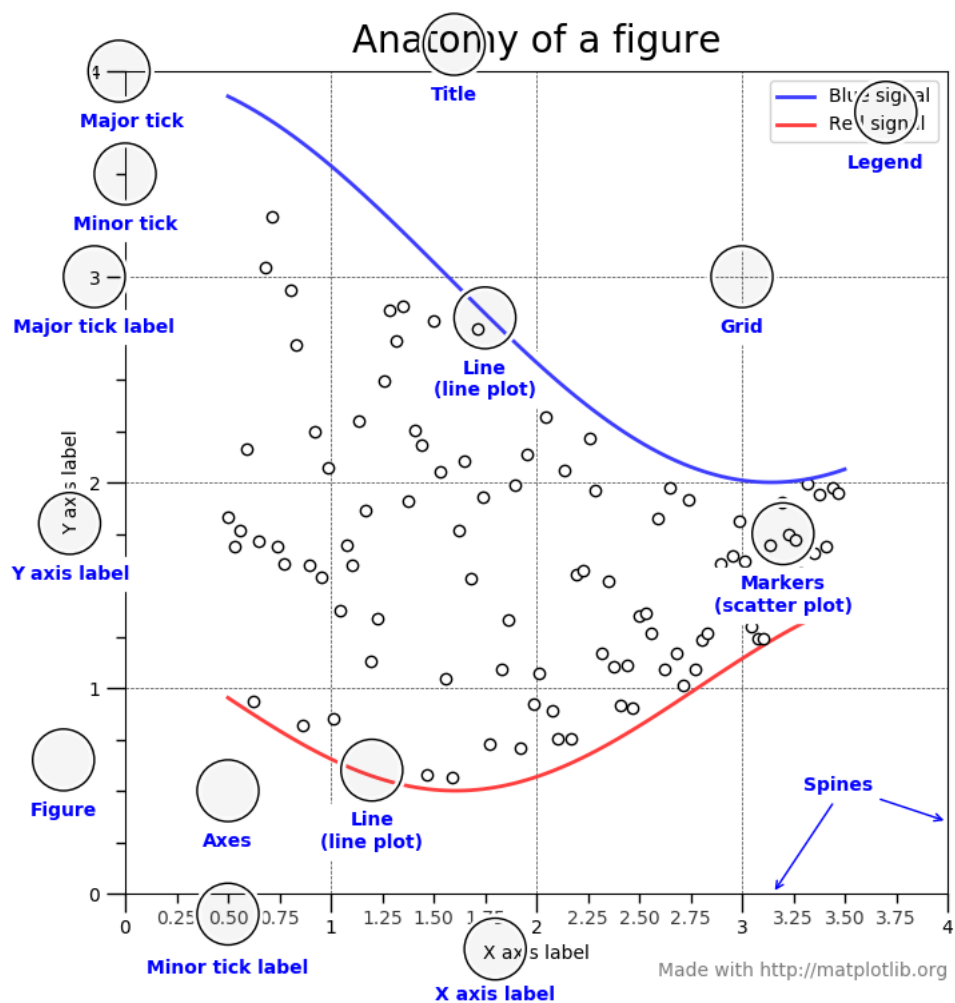
### ✓ plot()

[https://matplotlib.org/stable/api/\\_as\\_gen/matplotlib.pyplot.plot.html?highlight=pyplot%20plot#matplotlib.pyplot.plot](https://matplotlib.org/stable/api/_as_gen/matplotlib.pyplot.plot.html?highlight=pyplot%20plot#matplotlib.pyplot.plot)

```
x = [1, 2, 3, 4]
y = [4, 8, 2, 5]
```

```
plt.plot(x, y, label='Dados')
plt.ylabel('Eixo Y')
plt.xlabel('Eixo X')
plt.title('Título do Gráfico')
plt.grid(visible=True, which='major', axis='both')
plt.xticks([1, 2, 3, 4])
plt.yticks([2, 4, 6, 8])
plt.legend()
plt.show()
```

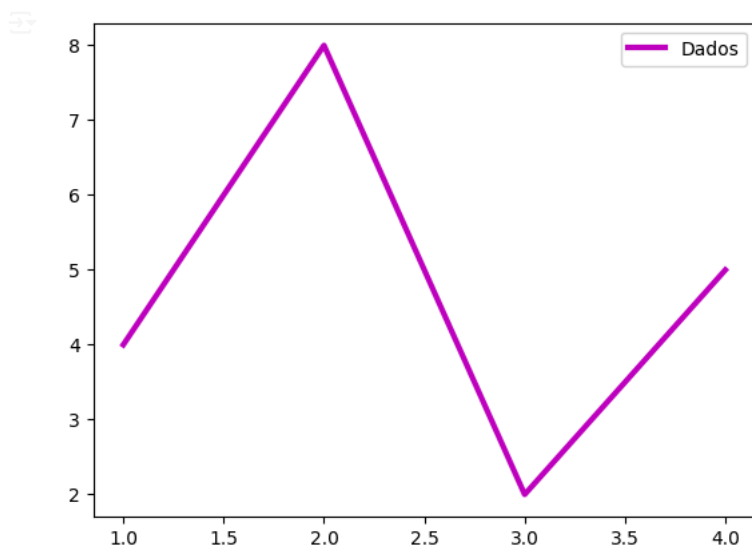




## ▼ LINES propiedades

[https://matplotlib.org/stable/api/\\_as\\_gen/matplotlib.lines.Line2D.html#matplotlib.lines.Line2D.set\\_marker](https://matplotlib.org/stable/api/_as_gen/matplotlib.lines.Line2D.html#matplotlib.lines.Line2D.set_marker)

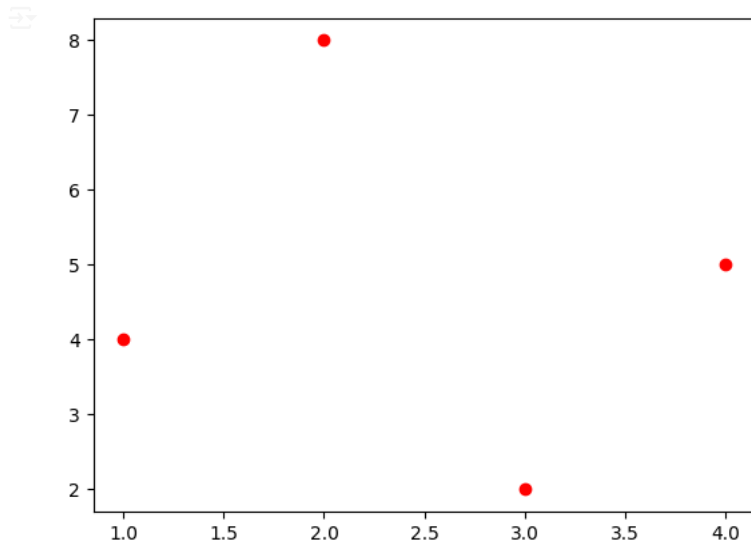
```
plt.plot(x, y, linestyle='solid', color='m', label='Dados', lw=3)
plt.legend()
plt.show()
```



## ▼ .Scatter()

[https://matplotlib.org/stable/api/\\_as\\_gen/matplotlib.pyplot.scatter.html#matplotlib.pyplot.scatter](https://matplotlib.org/stable/api/_as_gen/matplotlib.pyplot.scatter.html#matplotlib.pyplot.scatter)

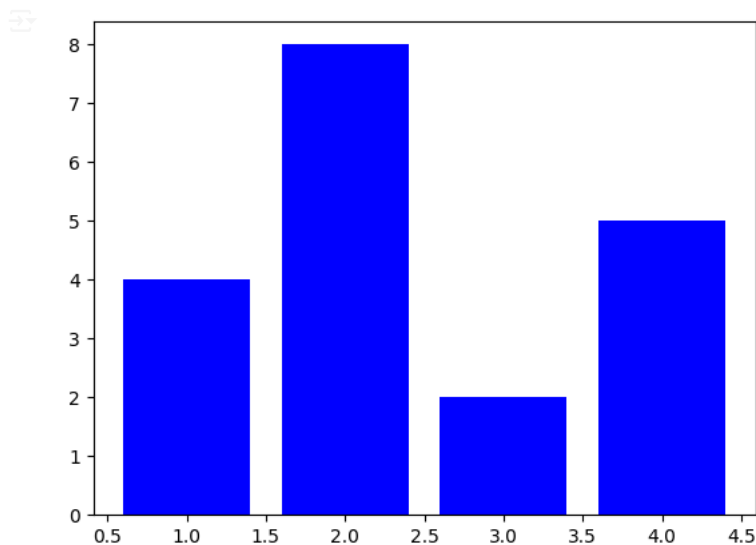
```
plt.scatter(x, y, color='red')  
plt.show()
```



▼ .bar()

[https://matplotlib.org/stable/api/\\_as\\_gen/matplotlib.pyplot.bar.html#matplotlib.pyplot.bar](https://matplotlib.org/stable/api/_as_gen/matplotlib.pyplot.bar.html#matplotlib.pyplot.bar)

```
plt.bar(x, y, color='b')  
plt.show()
```

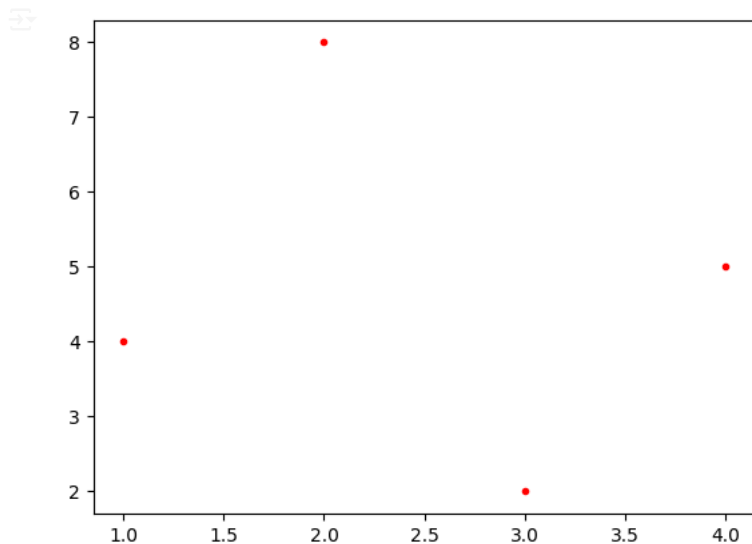


Nomeando os eixos de um gráfico:

▼ Mudando os tipos de marcadores do gráfico :

[https://matplotlib.org/stable/api/markers\\_api.html#module-matplotlib.markers](https://matplotlib.org/stable/api/markers_api.html#module-matplotlib.markers)

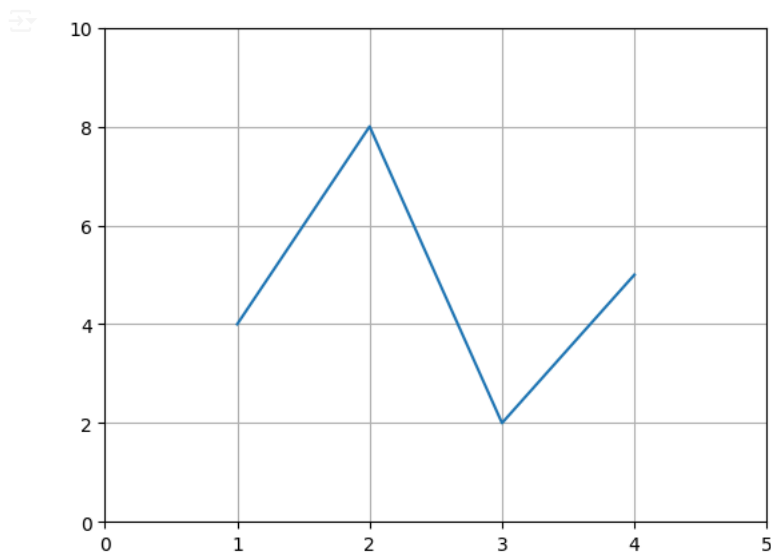
```
plt.scatter(x, y, color='red', marker='.')  
plt.show()
```



✓ Alterando os limites dos gráficos:

[https://matplotlib.org/stable/api/\\_as\\_gen/matplotlib.pyplot.axis.html#matplotlib.pyplot.axis](https://matplotlib.org/stable/api/_as_gen/matplotlib.pyplot.axis.html#matplotlib.pyplot.axis)

```
plt.plot(x, y)
plt.axis(xmin=0, xmax=5, ymin=0, ymax=10)
# plt.axis('square')
plt.grid(visible=True)
plt.show()
```



✓ FIGURE

[https://matplotlib.org/stable/api/figure\\_api.html?highlight=sharex#module-matplotlib.figure](https://matplotlib.org/stable/api/figure_api.html?highlight=sharex#module-matplotlib.figure)

## SUBPLOTS

[https://matplotlib.org/stable/api/\\_as\\_gen/matplotlib.pyplot.subplot.html](https://matplotlib.org/stable/api/_as_gen/matplotlib.pyplot.subplot.html)

```
valoresx = [1, 2, 3, 4]
valoresy = [1, 4, 2, 3]
figura = plt.figure(figsize=(15, 5)) # Tamanho do gráfico
figura.suptitle('Título Geral')

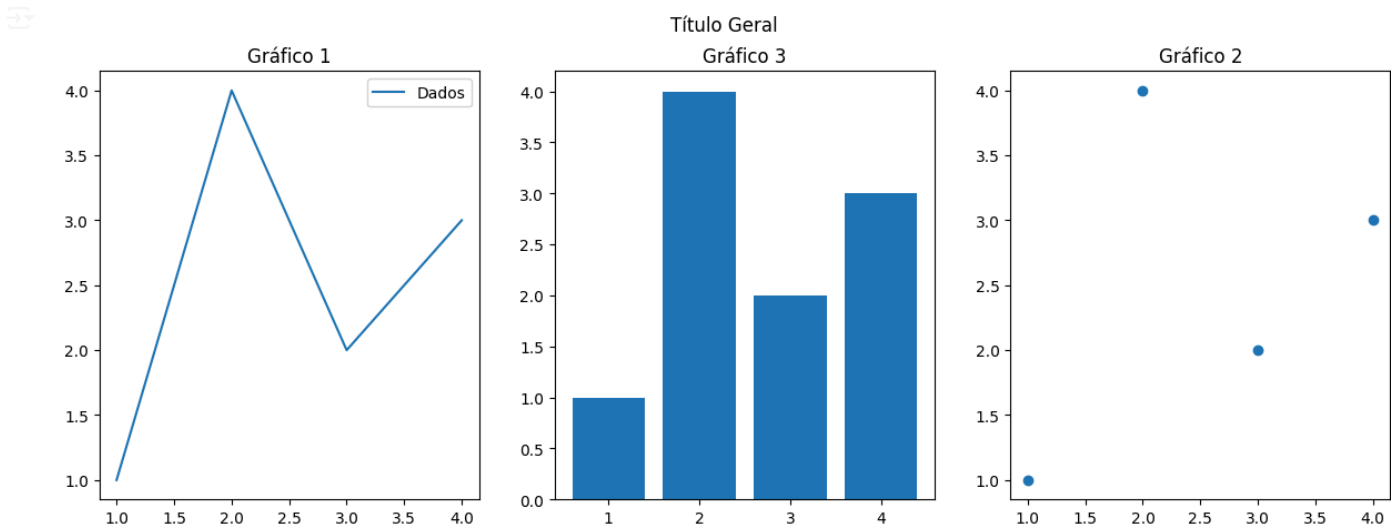
figura.add_subplot(131)
plt.plot(valoresx, valoresy, label='Dados' )
plt.legend()
plt.title('Gráfico 1')

figura.add_subplot(133)
plt.scatter(valoresx, valoresy)
plt.title('Gráfico 2')
```

```
figura.add_subplot(132)
plt.bar(valoresx, valoresy)
plt.title('Gráfico 3')

plt.savefig('gráficos.png')

plt.show(figura)
```



Aplicação: Fonte de dados Kaggle

<https://www.kaggle.com/mattiuzc/stock-exchange-data>

```
import pandas as pd

cotacao_df = pd.read_csv('indexData.csv')
display(cotacao_df)
```

	Index	Date	Open	High	Low	Close	Adj Close	Volume
0	NYA	1965-12-31	528.690002	528.690002	528.690002	528.690002	528.690002	0.0
1	NYA	1966-01-03	527.210022	527.210022	527.210022	527.210022	527.210022	0.0
2	NYA	1966-01-04	527.840027	527.840027	527.840027	527.840027	527.840027	0.0
3	NYA	1966-01-05	531.119995	531.119995	531.119995	531.119995	531.119995	0.0
4	NYA	1966-01-06	532.070007	532.070007	532.070007	532.070007	532.070007	0.0
...	...	...	...	...	...	...	...	...
112452	N100	2021-05-27	1241.119995	1251.910034	1241.119995	1247.069946	1247.069946	379696400.0
112453	N100	2021-05-28	1249.469971	1259.209961	1249.030029	1256.599976	1256.599976	160773400.0
112454	N100	2021-05-31	1256.079956	1258.880005	1248.140015	1248.930054	1248.930054	91173700.0
112455	N100	2021-06-01	1254.609985	1265.660034	1254.609985	1258.579956	1258.579956	155179900.0
112456	N100	2021-06-02	1258.489990	1263.709961	1258.239990	1263.619995	1263.619995	148465000.0

112457 rows × 8 columns

```
cotacao_df1 = cotacao_df[['Index', 'Date', 'Close']]
display(cotacao_df1)
```



	Index	Date	Close	
0	NYA	1965-12-31	528.690002	
1	NYA	1966-01-03	527.210022	
2	NYA	1966-01-04	527.840027	
3	NYA	1966-01-05	531.119995	
4	NYA	1966-01-06	532.070007	
...	...	...	...	
112452	N100	2021-05-27	1247.069946	
112453	N100	2021-05-28	1256.599976	
112454	N100	2021-05-31	1248.930054	
112455	N100	2021-06-01	1258.579956	
112456	N100	2021-06-02	1263.619995	

112457 rows × 3 columns

```
dfremove = cotacao_df1.loc[(cotacao_df1['Index'] != 'NYA')]  
cotacao_dffinal = cotacao_df1.drop(dfremove.index)  
# display(cotacao_dffinal)  
cotacao_dffinal = cotacao_dffinal[13900:]  
display(cotacao_dffinal)
```

	Index	Date	Close
13900	NYA	2021-03-23	15346.53027
13901	NYA	2021-03-24	15276.55957
13902	NYA	2021-03-25	15410.37012
13903	NYA	2021-03-26	15682.54004
13904	NYA	2021-03-29	15611.87988
13905	NYA	2021-03-30	15626.11035
13906	NYA	2021-03-31	15601.74023
13907	NYA	2021-04-01	15751.70020
13908	NYA	2021-04-05	15870.33984
13909	NYA	2021-04-06	15877.95996
13910	NYA	2021-04-07	15838.84961
13911	NYA	2021-04-08	15886.55957
13912	NYA	2021-04-09	15956.37012
13913	NYA	2021-04-12	15977.45996
13914	NYA	2021-04-13	15962.33984
13915	NYA	2021-04-14	16000.15039

```
plt.figure(figsize=(20, 5))
plt.plot(cotacao_dffinal['Date'], cotacao_dffinal['Close'], label='NYA', color='r', ls='--', lw='2')
plt.legend(loc=2, fontsize=10)
plt.ylabel('Valor do fechamento')
plt.xlabel('Data da cotação')
plt.title('Gráfico da cotação histórica da Bolsa NYA')
plt.grid(visible=True)
plt.show()
```

