

#### **Ouick** start

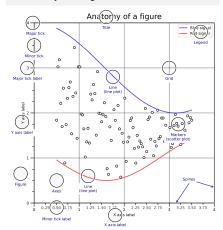
import numpy as np import matplotlib as mpl import matplotlib.pyplot as plt

X = np.linspace(0, 2\*np.pi, 100) Y = np.cos(X)

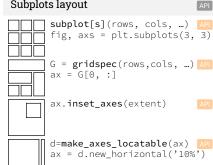
fig, ax = plt.subplots() ax.plot(X, Y, color='green')

fig.savefig("figure.pdf") plt.show()

#### Anatomy of a figure



## Subplots layout



## Getting help

matplotlib.org

github.com/matplotlib/matplotlib/issues discourse.matplotlib.org

stackoverflow.com/questions/tagged/matplotlib https://gitter.im/matplotlib/matplotlib

**y** twitter.com/matplotlib

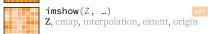
✓ Matplotlib users mailing list

#### Basic plots



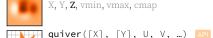
scatter(X, Y, ...) X, Y, [s]izes, [c]olors, marker, cmap

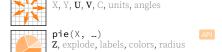






contour[f]([X], [Y], Z, ...) [API









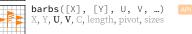
## Advanced plots



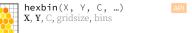


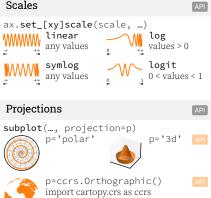


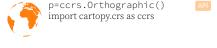




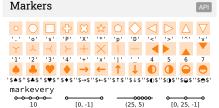














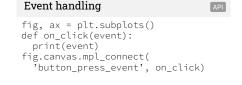








Cyclic



0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9

ticker.ScalarFormatter()

Ornaments

ax.legend(...)

Legend -

ax.colorbar(...)

ticker.StrMethodFormatter('{x}')

ticker.PercentFormatter(xmax=5)

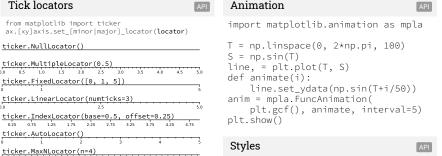
handles, labels, loc, title, frameon

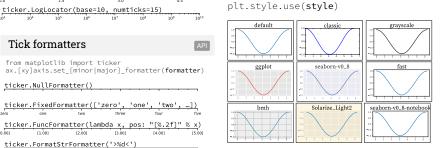
abel 1

Label 2

mappable, ax, cax, orientation

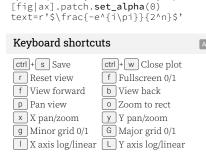
Label 3







```
ax.grid()
ax.set_[xy]lim(vmin, vmax)
ax.set [xy]label(label)
ax.set_[xy]ticks(ticks, [labels])
ax.set_[xy]ticklabels(labels)
ax.set title(title)
ax.tick_params(width=10, ...)
ax.set_axis_[on|off]()
fig.suptitle(title)
fig.tight_layout()
plt.gcf(), plt.gca()
mpl.rc('axes', linewidth=1, ...)
```



# Ten simple rules

1. Know your audience

2. Identify your message

3. Adapt the figure

4. Captions are not optional

5. Do not trust the defaults

6. Use color effectively

7. Do not mislead the reader

8. Avoid "chartiunk"

9. Message trumps beauty 10. Get the right tool

