import matplotlib.pyplot as plt

import numpy as np

x\_vals = np.linspace(0, 10, 100)

y\_sin = np.sin(x\_vals)

y\_cos = np.cos(x\_vals)

fig, (axis1, axis2) = plt.subplots(2, 1, figsize=(10, 8))

axis1.plot(x\_vals, y\_sin, label='sin(x)', color='blue', linestyle='-')

axis1.set\_title('Sine Function')

axis1.set\_xlabel('x-axis')

axis1.set\_ylabel('sin(x)')

axis1.grid(True)

axis1.legend(loc='upper right')

axis1.set\_xticks(np.arange(0, 11, 1))

axis1.set\_yticks(np.arange(-1, 1.5, 0.5))

axis1.set\_xticklabels([f'{i}' for i in range(11)])

axis1.set\_yticklabels([f'{i:.1f}' for i in np.arange(-1, 1.5, 0.5)])

axis1.annotate('Max Value', xy=(np.pi/2, 1), xytext=(np.pi/2+1, 0.8),

arrowprops=dict(facecolor='black', shrink=0.05))

axis2.plot(x\_vals, y\_cos, label='cos(x)', color='red', linestyle='--')

axis2.set\_title('Cosine Function')

axis2.set\_xlabel('x-axis')

axis2.set\_ylabel('cos(x)')

axis2.grid(True)

axis2.legend(loc='upper right')

axis2.set\_xticks(np.arange(0, 11, 1))

axis2.set\_yticks(np.arange(-1, 1.5, 0.5))

axis2.set\_xticklabels([f'{i}' for i in range(11)])

axis2.set\_yticklabels([f'{i:.1f}' for i in np.arange(-1, 1.5, 0.5)])

axis2.annotate('Min Value', xy=(np.pi, -1), xytext=(np.pi+1, -0.8),

arrowprops=dict(facecolor='black', shrink=0.05))

plt.tight\_layout()

plt.savefig('line\_plot\_with\_annotations.png')

plt.show()