import matplotlib.pyplot as plt

import numpy as np

# Generate data

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

y1\_values = np.sin(x\_values)

y2\_values = np.cos(x\_values)

# Create subplots

fig, (subplot1, subplot2) = plt.subplots(2, 1, figsize=(10, 8))

# Plot for subplot1 (Sine Function)

subplot1.plot(x\_values, y1\_values, label='sin(x)', color='blue', linestyle='-')

subplot1.set\_title('Sine Function')

subplot1.set\_xlabel('x-axis')

subplot1.set\_ylabel('sin(x)')

subplot1.grid(True)

subplot1.legend(loc='upper right')

subplot1.set\_xticks(np.arange(0, 11, 1))

subplot1.set\_yticks(np.arange(-1, 1.5, 0.5))

subplot1.set\_xticklabels([f'{i}' for i in range(11)])

subplot1.set\_yticklabels([f'{i:.1f}' for i in np.arange(-1, 1.5, 0.5)])

subplot1.annotate('Max Value', xy=(np.pi/2, 1), xytext=(np.pi/2+1, 0.8),

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

# Plot for subplot2 (Cosine Function)

subplot2.plot(x\_values, y2\_values, label='cos(x)', color='red', linestyle='--')

subplot2.set\_title('Cosine Function')

subplot2.set\_xlabel('x-axis')

subplot2.set\_ylabel('cos(x)')

subplot2.grid(True)

subplot2.legend(loc='upper right')

subplot2.set\_xticks(np.arange(0, 11, 1))

subplot2.set\_yticks(np.arange(-1, 1.5, 0.5))

subplot2.set\_xticklabels([f'{i}' for i in range(11)])

subplot2.set\_yticklabels([f'{i:.1f}' for i in np.arange(-1, 1.5, 0.5)])

subplot2.annotate('Min Value', xy=(np.pi, -1), xytext=(np.pi+1, -0.8),

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

# Adjust layout and save/show plot

plt.tight\_layout()

plt.savefig('modified\_line\_plot\_with\_annotations.png')

plt.show()