import numpy as np

import matplotlib.pyplot as plt

from scipy.optimize import curve\_fit

xdata = np.array([-10.0, -9.0, -8.0, -7.0, -6.0, -5.0, -4.0, -3.0, -2.0, -1.0, 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0])

ydata = np.array([1.2, 4.2, 6.7, 8.3, 10.6, 11.7, 13.5, 14.5, 15.7, 16.1, 16.6, 16.0, 15.4, 14.4, 14.2, 12.7, 10.3, 8.6, 6.1, 3.9, 2.1])

def quadratic\_fit(X, A, B, C):

return A \* X\*\*2 + B \* X + C

params, covariance = curve\_fit(quadratic\_fit, xdata, ydata)

A, B, C = params

# Generate the fitted y values

y\_fit = quadratic\_fit(xdata, A, B, C)

plt.plot(xdata, ydata, '-\*', label='Data')

plt.plot(xdata, y\_fit, '-o',label='fit')

plt.legend()

plt.grid()

plt.show()