### Lab 9: Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs

import numpy as np

import matplotlib.pyplot as plt

def local\_regression(x0, X, Y, tau):

x0 = [1, x0]

X = [[1, i] for i in X]

X = np.asarray(X)

xw = (X.T) \* np.exp(np.sum((X - x0) \*\* 2, axis=1) / (-2 \* tau))

beta = np.linalg.pinv(xw @ X) @ xw @ Y @ x0

return beta

def draw(tau):

prediction = [local\_regression(x0, X, Y, tau) for x0 in domain]

plt.plot(X, Y, 'o', color='black')

plt.plot(domain, prediction, color='red')

plt.show()

X = np.linspace(-3, 3, num=1000)

domain = X

Y = np.log(np.abs(X \*\* 2 - 1) + .5)

draw(10)

draw(0.1)

draw(0.01)

draw(0.001)