Assignment 8 :Polynomial Regression

1. PFA the data with dependant variable y and independent variable x.
2. Fit a polynomial regression model (y modelled as linear function of various higher degree terms of x) in following steps
3. 80:20 split into train and test set
4. Create 30 samples of size 20 each.
    a. For each of the sample
        i. Incrementally fit polynomials of degree upto 10.
        ii. Measure train accuracy using 20 train data points and test accuracy using the full test set
    b. Use violin plot to observe the fluctuations in test error corresponding to the degree
    c. Create another violin plot of degree vs (train error – test error)
5. From the training data sample 20 points.
    a. Use k=5 fold cross validation to determine the highest degree polynomial you should fit on this sample
    b. Once you finalise the highest degree, train the model of that degree on the 20 sample points
    c. Use the above model to measure accuracy of model on the test set
6. On the full train data , use k (=10) fold cross validation as well as l1 and l2 regularisation to fit a polynomial and measure accuracy on test data.