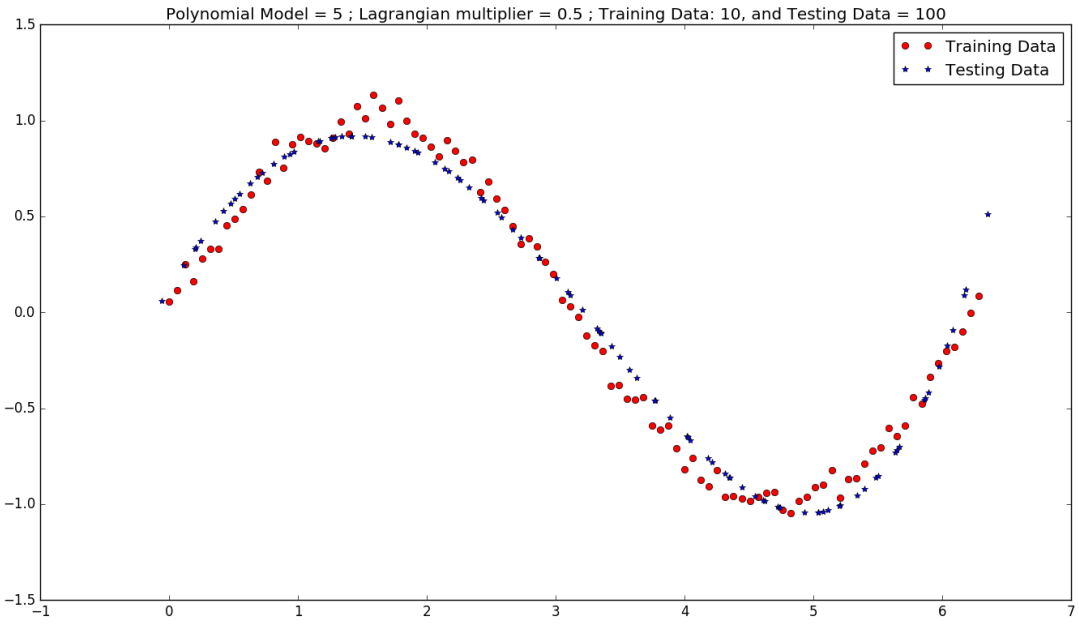
1c)
Linear Regression using Polynomial Basis function -

The parameters based on which the output calculation varies in this case is Polynomial model, No.of Training Samples and Lagrangian multiplier.

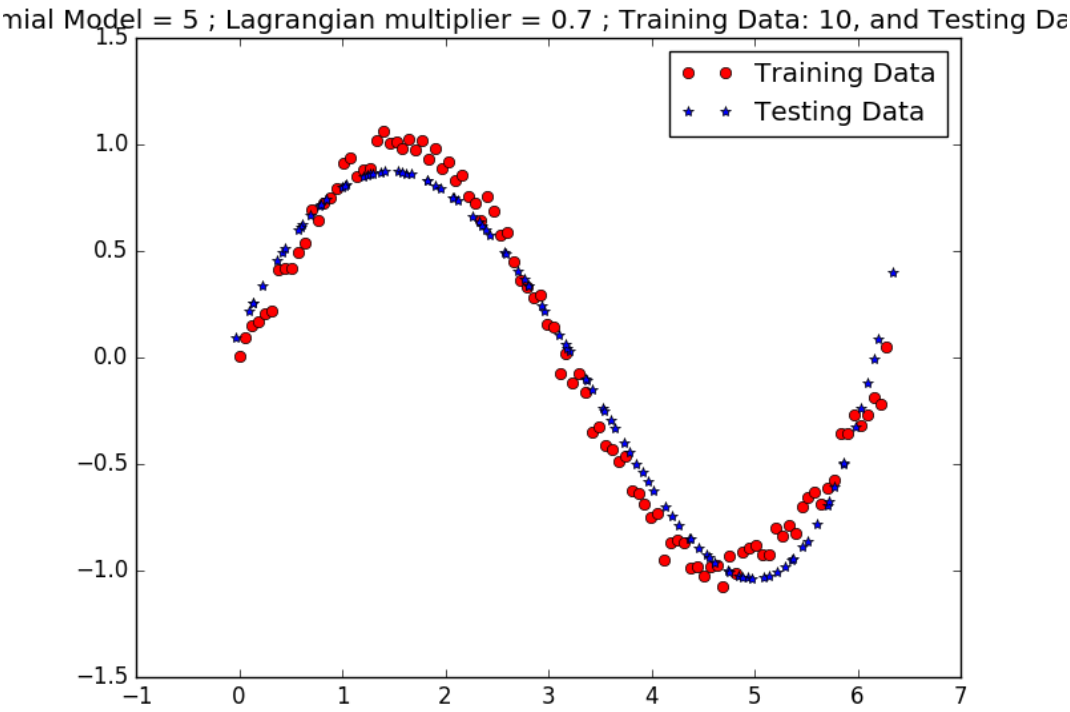
- For M = 5

We can observe that as the Lagrangian multiplier changes, the error is changing which means the accuracy of prediction of data is changing. We need to find such a Lagrangian multiplier which gives best accuracy.

Also by increasing samples of training data, accuracy is increasing in better way.



Average error: 0.0108375976193



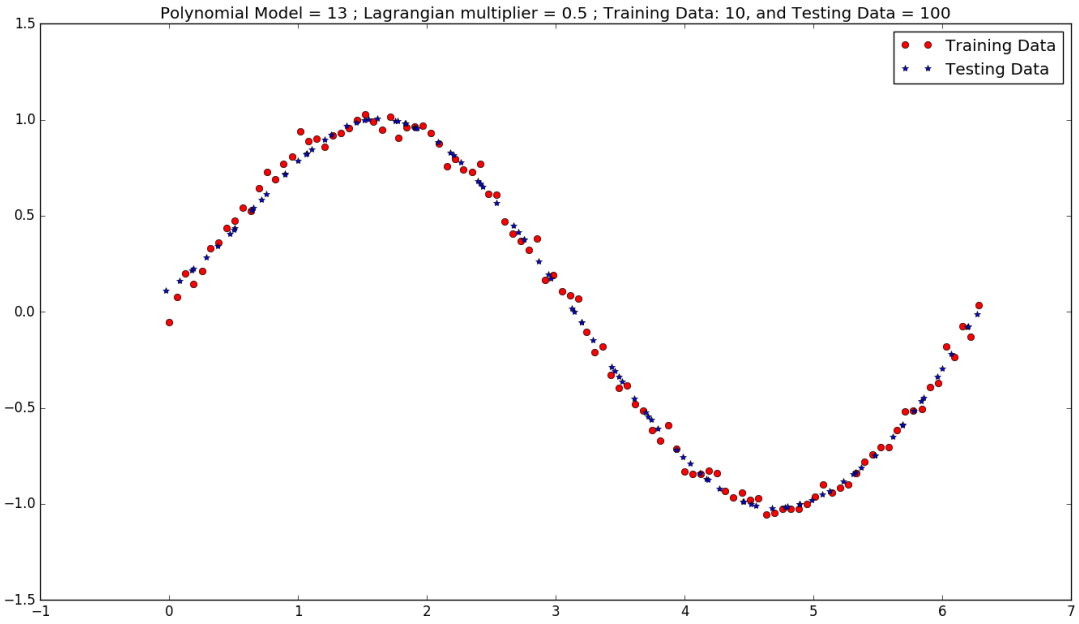
Average error: 0.0122392355612

- For M = 13

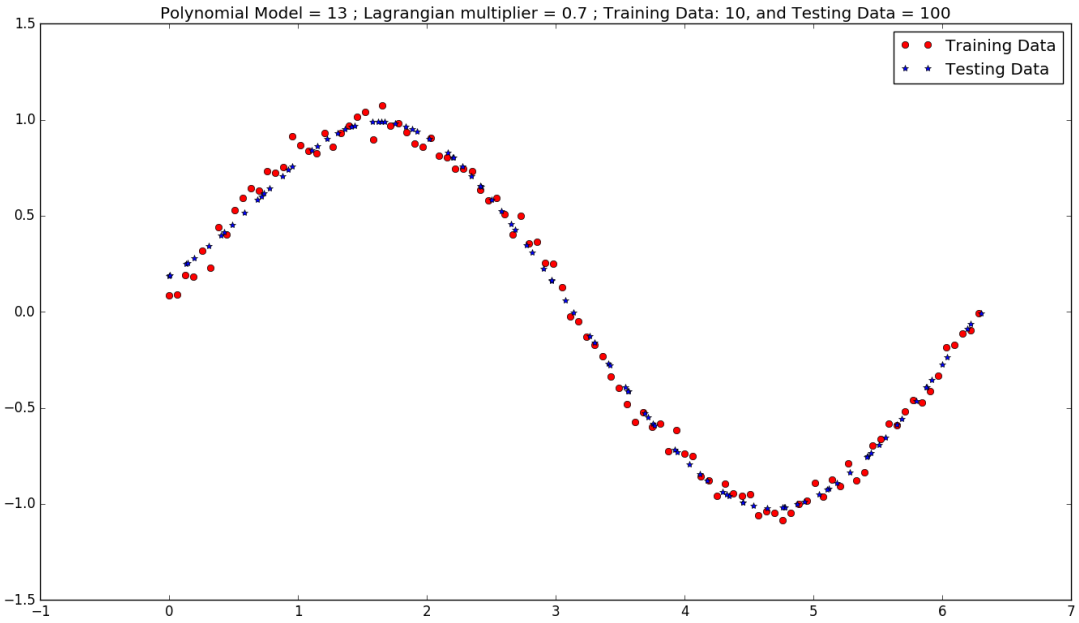
Even in this case, we can observe that as the Lagrangian multiplier changes, the error is changing which means the accuracy of prediction of data is changing. We need to find such a Lagrangian multiplier which gives best accuracy.

Also by increasing samples of training data, accuracy is increasing in better way.

Important : In case of problem 1b), we did not get the correct prediction with M=13. But by regularisation, we can observe it. It is because of having control over weights. We need to find a proper Lagrangian multiplier to get the best accuracy.



Average error: 0.00090758525159



Average error: 0.00150471060738