Intro2MachineLearningHW04 Gökalp Ünsal

Variables:

train_set: training set (100/*2)

test_set: test set (33*2)

x: all of the x data (133*1)

y: all of the y data (133*1)”

x_train: x column of the train set.

y_train: y column of the train set.

x_test: x column of the test set.

y_test: y column of the test set

left_borders: starting from the origin the left border of the bin widths.

right_borders: starting from the origin the left border of the bin widths.

y_predicted: the predicted data, is found by calculating the mean of of every bin.

Functions:

rmse: the function for calculating the root mean squared error

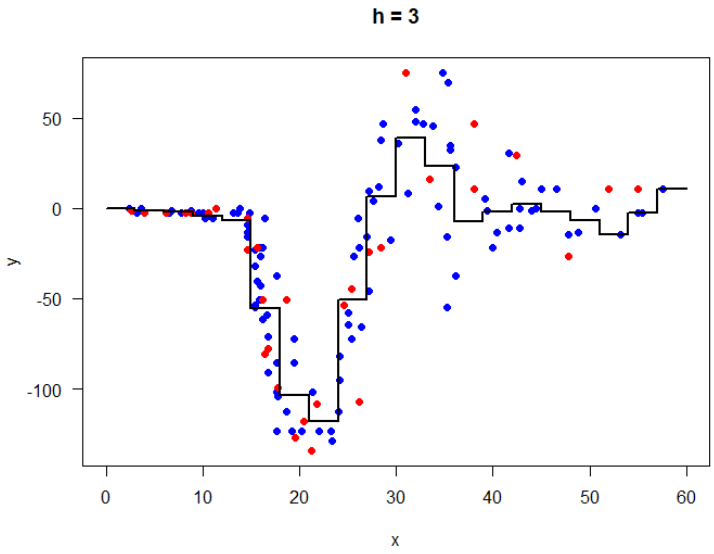
plot_data_points: The function that plots the data points for every part of the homework.

weighted_learner_template: For the Mean and Kernel smoother, the template for applying smoother and calculating the root mean squared error, then printing it.

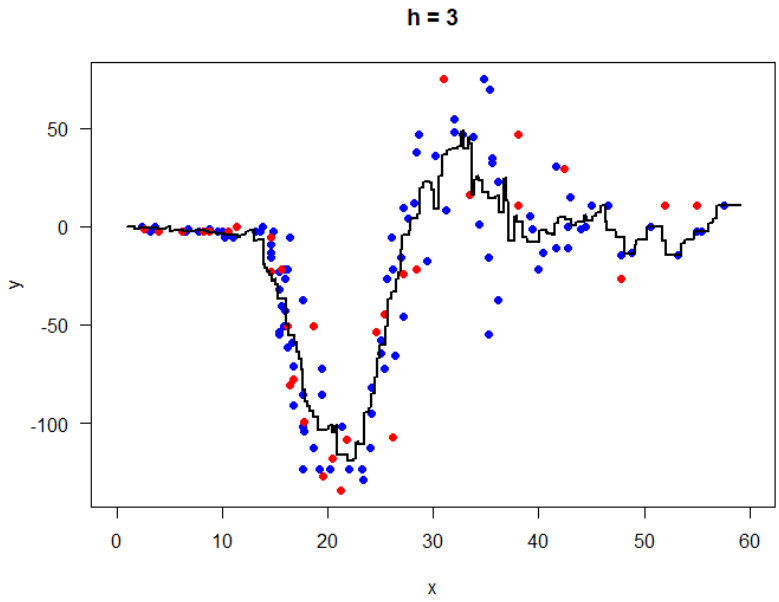
The data set was different in this homework, so I wrote the importing part from scratch. Then I took the variales such as bin width, data_interval, maximum minimum valur from the lab . The plotting and the calculations are also from the lab but I had to change it in order to make it work for the homework because in the lab we were applying those algorithm in densities rather that the means. In the homework we were trying to predict the y value of the data set with the help of the data in its bin.

Output:

```
"Regressogram => RMSE is 24.7260 when h is 3"
```




```
"Running Mean Smoother => RMSE is 23.8403 when h is 3"
```



```
"Kernel Smoother => RMSE is 24.1672 when h is 1"
```