Part 1

This is a high level description of what why code does.
1) Create lists M, alpha and w which will contain the classifiers, confidence factors, and weights.
2) Using the training data points and the weight list create a linear classifier using the same process as we had done in HW2. Then append it to M
3) Using the classifier that we just made, test it using the training data and keep track of all the errors in the predictions.
4) Using the errors calculate the error rate, confidence factor and weight factors. Also append the confidence factor to the alpha list
5) Update the weight list with the weight factors accordingly.
6) If the error rate is less than 0.5 then jump back to step 1

Part 2

Iteration: 1
Error: 0.1875
Alpha: 0.7332
Factor to increase weights = 2.67
Factor to decrease weights = 0.62

Iteration: 2
Error: 0.2718
Alpha: 0.4928
Factor to increase weights = 1.84
Factor to decrease weights = 0.69

Iteration: 3
Error: 0.625
Alpha: -0.2554
Factor to increase weights = 0.8
Factor to decrease weights = 1.33

Iteration: 4
Error: 0.9526
Alpha: -1.5006
Factor to increase weights = 0.52
Factor to decrease weights = 10.56

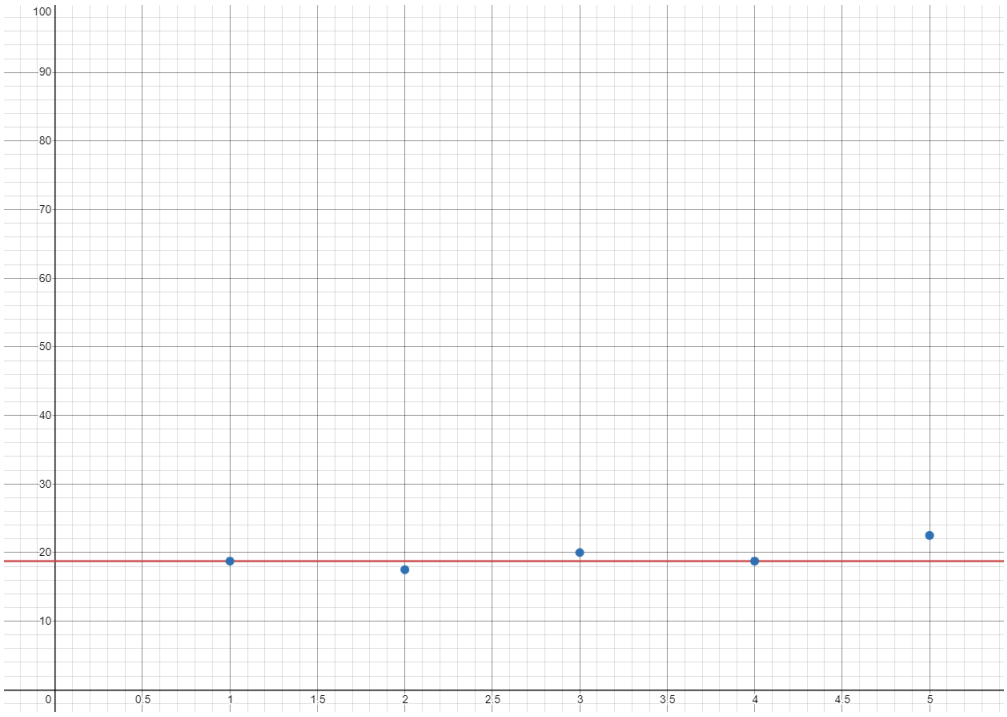
Iteration: 5
Error: 0.9977
Alpha: -3.0385
Factor to increase weights = 0.5
Factor to decrease weights = 218.37

Testing:
False positives: 3
False negatives: 15
Error rate: 22.5

Part 3

Basic linear classifier error rate: 18.75%

error rate of boosted version:
T = 1: 18.75%
T = 2: 17.5%
T = 3: 20%
T = 4: 18.75%
T = 5: 22.5%



x axis is the T value and the y axis is the error rate in percentage