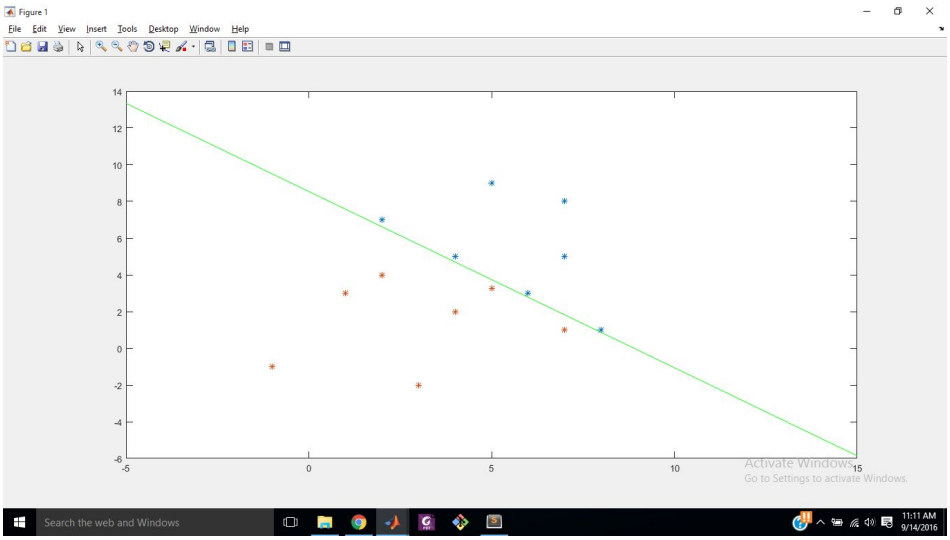
Assignment 1

A. Single-sample perceptron

1. Initial weight vector is a = [10.3 1.8 -5];
   Total iteration over the vectors are 71.



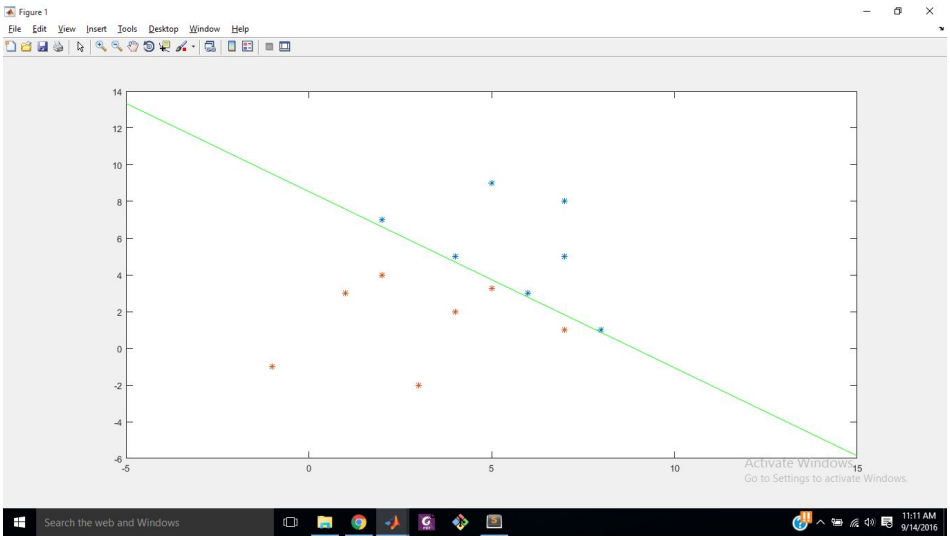
2. Initial weight vector is a = [1 1 1];
   Total iteration over the vectors are 282.
   After these iterations the samples get classified, as shown above. There is very little change in the position of the separating boundary.
   Final weight vector is [-18 2 2.25]

3. Initial weight vector is a = [-10 -10 -10];
   Total iteration over the vectors are 16.
   After these iterations the samples get classified, as shown above. There is very little change in the position of the separating boundary.

4. Initial weight vector is a = [-10 -10 1];
   Total iteration over the vectors are 58.
   After these iterations the samples get classified, as shown above,There is very little change in the position of the separating boundary.

B. Single-sample perceptron with margin

1. Initial weight vector is a = [10.3 1.8 -5];
   Total iteration over the vectors are 14. There is a rapid decrease in number of iterations as compared to single-sample without margin.



2. Initial weight vector is a = [1 1 1];
   Total iteration over the vectors are 282.
   After these iterations the samples get classified, as shown above. There is very little change in the position of the separating boundary.