Class Exercises. Set 6

1. Consider the training set X = {(-3; 6); (-1; 0); (1; 0); (3; 6)}.

a. Perform one iteration of the k-means algorithm with two centers, using as initial positions of the centers (-1; 1) and (1; 1).

b. Check whether the result that you obtained corresponds to a minimum (not necessarily a global minimum!) of the cost function of the algorithm.

c. Compute the value of the cost function for the result that you obtained in a) above.

e. Find a position of the centers that corresponds to a minimum of the cost function that is lower than the value of the cost function in the position found in a) above. Note that you don't have to compute that minimum. You just have to indicate what is the position of the centers, to show that it is a minimum and to show that the cost function is lower than in the position obtained in a).