Question 1:

Data = [ 1 2 5 6 8 9 10 11 13 15 17 ]

Initial means = [ 1 3 10 ]

Iteration 1:

Cluster 1: [1, 2],

Cluster 2: [5, 6],

Cluster 3: [8, 9, 10, 11, 13, 15, 17],

Iteration 2:

Cluster 1: [1, 2],

Cluster 2: [5, 6, 8],

Cluster 3: [9, 10, 11, 13, 15, 17],

Iteration 3:

Cluster 1: [1, 2],

Cluster 2: [5, 6, 8, 9],

Cluster 3: [10, 11, 13, 15, 17],

Iteration 4:

Cluster 1: [1, 2],

Cluster 2: [5, 6, 8, 9, 10],

Cluster 3: [11, 13, 15, 17],

Question 2:

* 1. We should classify them as red.
  2. For , we choose the closest data point (3, 3) which will classify the label as green.
  3. For , we will classify the label as red since there are three data points has been classified as red.
  4. ListPlot[{{{2, 3}}, {{1, 2}, {1, 4}, {0, 3}}, {{2, 5}, {3, 5}}, {{3, 3}}}, PlotStyle -> {Black, Red, Blue, Green}, Background -> LightGray, ImageSize -> Large]
  5. 
  6. My answers to the previous two questions agree with this plot, indicates that the plot is depends on the value of . If , it will be classified as green and it will increase since other colors will become to the majority.