K-means

1. Compute the new position of the cluster centres after 1 step of k-means. Data: <1, 1>, <0, 2>, <-1, 2>, <5, 6>, <7, 5>. Cluster centres: <-1, -1>, <4,6>.

   Points assigned to cluster <-1, -1>: <1, 1>, <0, 2>, <-1, 2>
   Points assigned to cluster <4,6>: <5, 6>, <7, 5>

   New cluster centres: $\langle (1+0-1)/3, (1+2+2)/3 \rangle = \langle 0, 1.66 \rangle$ and
   $\langle (5+7)/2, (6+5)/2 \rangle = \langle 6, 5.5 \rangle$

2. Same as (1), with the single cluster centre: <1, -1>

   New cluster centre: $\langle 2.4, 3.2 \rangle$.

3. Same as (1), with data: <1, 3>, <2, 2>, <3, -1>, <4,2>, <5,-3>, <5,4>, <4,5>, <3,-6>, <2,5>; and centres: <0,1>, <0, -1>.

   Points assigned to cluster <0,1> = <1,3>, <2,2>, <4,2>, <5,4>, <4,5>, <2,5>
   Points assigned to cluster <0,-1> = <3, -1>, <5,-3>, <3,-6>

   New cluster centres: <3,3.5>, <3.66, -3.33>