

2.- K-NEAREST NEIGHBOURS (KNN), k=1,2,3

We have calculated the clusters using K-means, and the results are the following

coordinates	x	y
person	bubbles	sweetness
A	3	8
B	5	5
C	4	5
D	4	7
E	3	4
F	2	2
G	5	7
H	6	3

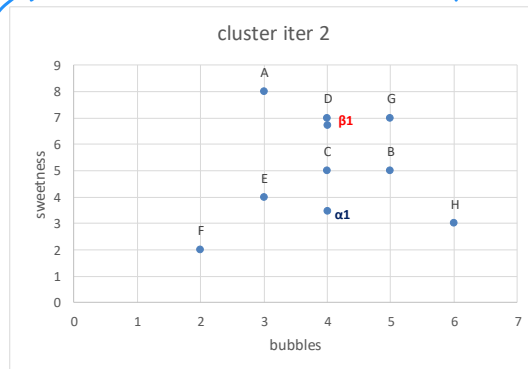
$\alpha 1$	4	3,5
$\beta 1$	4	6,75

distance matrix&class assigning ITER 2

	α	β	Class
A	4,60977223	1,60078106	β
B	1,80277564	2,01556444	α
C	1,5	1,75	α
D	3,5	0,25	β
E	1,11803399	2,92617498	α
F	2,5	5,15388203	α
G	3,64005494	1,03077641	β
H	2,06155281	4,25	α

Haciendo la dist
de cada punto
con α y β

Pertenece a Beta porque se aproxima mas a Beta.



$$A(3,8) \propto (4, 3,5) = \sqrt{(3-4)^2 + (8-3,5)^2} = 4,6098$$

Now we want to classify new customers to decide to offer them product alfa or beta

The customers' j preferences are in the first table and KNN solution in the second:

coordinates	x	y
person	bubbles	sweetness
j	5	2

j	K=1	K=2	K=3
A	6,32455532		
B	3		α
C	3,16227766		
D	5,09901951		
E	2,82842712	α	α
F	3		α
G	5		
H	1,41421356	α	α
min1,2,3,	1,41421356	2,82842712	3
point	H	E	F

Choose a new customer preference and classify it using KNN 1,2,3

coordinates	x	y
person	bubbles	sweetness
k	5	8

k	K=1	K=2	K=3
A	2		
B	3		
C	3,162		
D	1,414		
E	4,143		
F	6,130		
G	1		
H	5,109		
min1,2,3,	1	2	3
point	G	A	B

Te inventas los
números

k = Hay que hacer la distancia.

$$\text{Dist}(k,A) = \sqrt{(5-3)^2 + (8-8)^2} = 2$$

$k(5,8)$
 $A(3,8)$
 $\begin{matrix} A & k & + & A - k \\ x_0 & x_1 & & y_0 & y_1 \end{matrix}$

The result is _____