

1. (3 points) Which of the following option is true about k -NN algorithm?
 - (a) It can be used for classification.
 - (b) It can be used for regression.
 - (c) It can be used in both classification and regression.
 - (d) None of the above
2. (3 points) Which of the following statement is true about k -NN algorithm?
 - (a) k -NN performs much better if all of the data have the same scale.
 - (b) k -NN works well with a small number of input variables, but struggles when the number of inputs is very large.
 - (c) k -NN makes no assumptions about the distribution of the data.
 - (d) All of the above.
 - (e) None of the above.
3. Suppose, you have given the following data where x and y are the 2 input variables and Class is the dependent variable.

x	y	Class
-1	1	-
0	1	+
0	2	-
1	-1	-
1	0	+
1	2	+
2	2	-
2	3	+

- (a) (4 points) Consider the point $A = (0,0)$. Using the two-nearest neighbors, what is the classification of the point A ?
 - (b) (4 points) Consider the point $B = (3,3)$. Using the three-nearest neighbors, what is the classification of the point B ?
4. (4 points) Consider the points $A = (1,3)$ and $B = (2,3)$. **In Python**, find the Euclidean distance between A and B .
5. (4 points) Consider the points $C = (4,3)$ and $D = (2,5)$. **In R**, find the Euclidean distance between C and D .