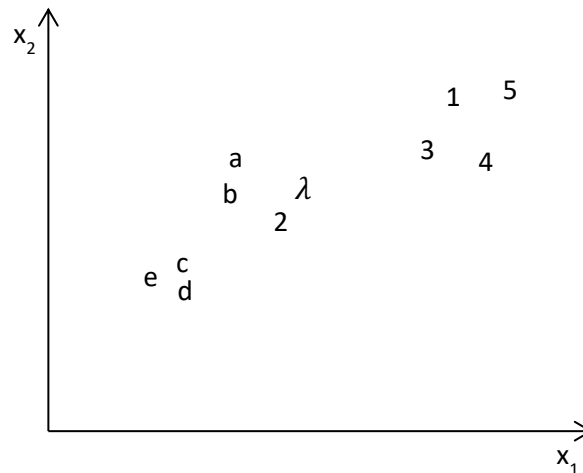




kNN-Classification – Exercise 1

The diagram below shows 2-dim feature vectors of the two classes “letter” and “digit” (displayed as letters a – e and digits 1 – 5, respectively). We will apply different forms of the nearest neighbor classifier for differentiating these classes, using Euclidean distance as metric. Which class is assigned to the unknown feature vector λ in the following cases?

- a) Standard 1-NN classifier
- b) 3-NN classifier
- c) Give criteria for rejecting (i.e. refusing to classify) feature vectors using a 3-NN classifier. Which class is assigned to the unknown feature vector x now?



- d) A disadvantage of the k NN classifier is that the complete training sample must be stored in memory and searched during classification. Propose a method to avoid this. Are there any disadvantages to your method?