# Module 1 Quiz

Total points 10

Question 1

Select the option that correctly completes the sentence:

Training a model using labeled data and using this model to predict the labels for new data is known as _____.

- Unsupervised Learning
- Supervised Learning
- Clustering
- Density Estimation

Question 2

Select the option that correctly completes the sentence:

Modeling the features of an unlabeled dataset to find hidden structure is known as _____.

- Supervised Learning
- Classification
- Unsupervised Learning
- Regression

Question 3

Select the option that correctly completes the sentence:

Training a model using categorically labelled data to predict labels for new data is known as _____.

- Classification
- Regression
- Clustering
- Feature Extraction

Question 4

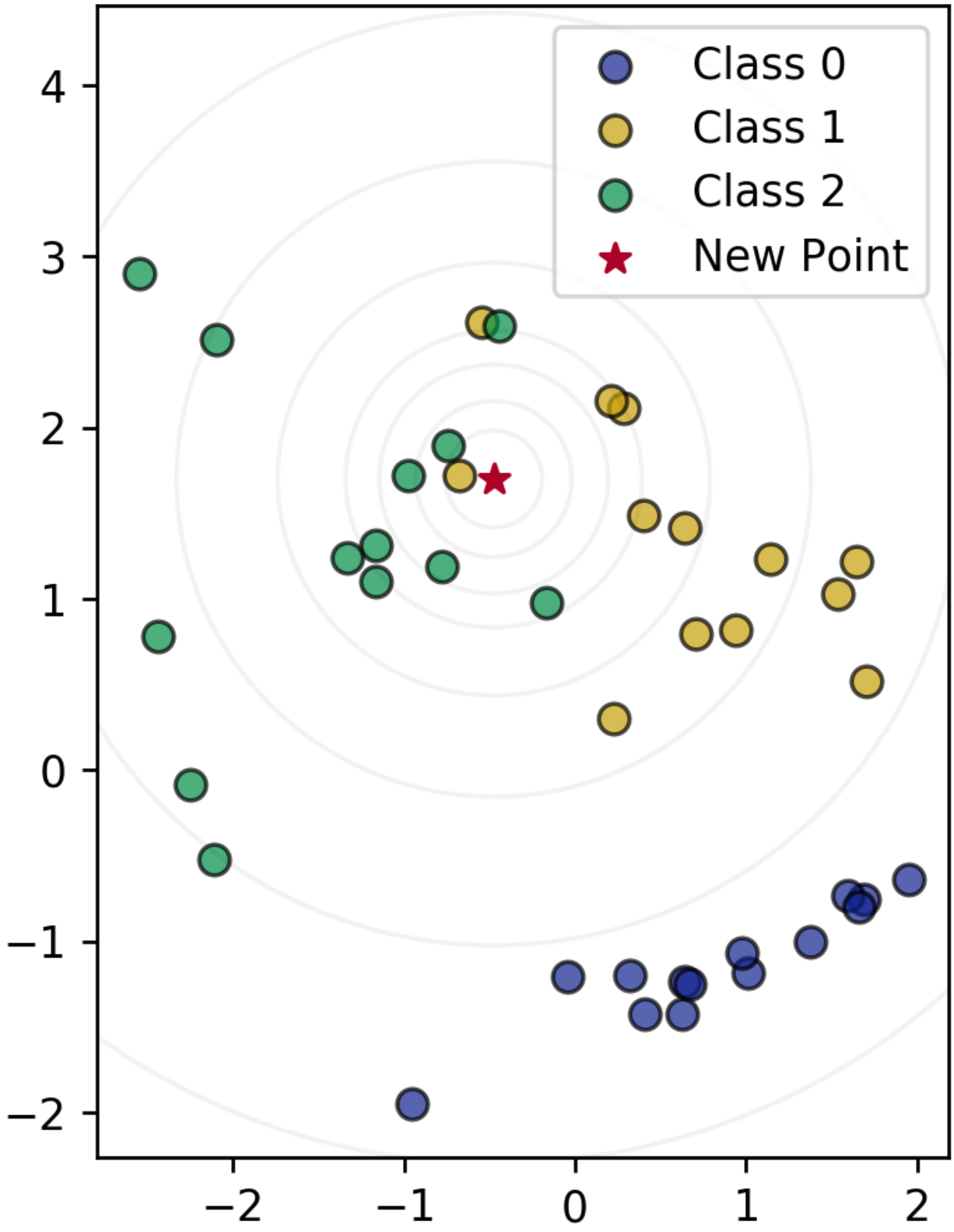
Select the option that correctly completes the sentence:

Training a model using labelled data where the labels are continuous quantities to predict labels for new data is known as _____.

- Classification
- Feature Extraction
- Clustering
- Regression

Question 5

Using the data for classes 0, 1, and 2 plotted below, what class would a KNeighborsClassifier classify the new point as for k = 1 and k = 3?


Class 0
Class 1
Class 2
New Point
4
3
2
1
0
−1
−2
−2
−1
0
1
2

- ○ • k=1: Class 1<br>• k=3: Class 0
- ○ • k=1: Class 1<br>• k=3: Class 0
- ○ • k=1: Class 2<br>• k=3: Class 1
- ○ • k=1: Class 0<br>• k=3: Class 2
- ◉ • k=1: Class 1<br>• k=3: Class 2

Question 6

Which of the following is true for the nearest neighbor classifier (Select all that apply):

- ☐ Partitions observations into k clusters where each observation belongs to the cluster with the nearest mean
- ☐ Given a data instance to classify, computes the probability of each possible class using a statistical model of the input features
- ☑ Memorizes the entire training set
- ☐ A higher value of k leads to a more complex decision boundary

Question 7

Why is it important to examine your dataset as a first step in applying machine learning? (Select all that apply):

- ☑ See what type of cleaning or preprocessing still needs to be done
- ☑ You might notice missing data
- ☑ Gain insight on what machine learning model might be appropriate, if any
- ☑ Get a sense for how difficult the problem might be
- ☐ It is not important

Question 8

The key purpose of splitting the dataset into training and test sets is:

- ○ To reduce the amount of labelled data needed for evaluating classifier accuracy
- ○ To speed up the training process
- ○ To reduce the number of features we need to consider as input to the learning algorithm
- ◉ To estimate how well the learned model will generalize to new data

Question 9

The purpose of setting the random_state parameter in train_test_split is: (Select all that apply)

- [x] To make experiments easily reproducible by always using the same partitioning of the data
- [ ] To split the data into similar subsets so that bias is not introduced into the final results
- [ ] To avoid bias in data splitting
- [ ] To avoid predictable splitting of the data

Question 10

Given a dataset with 10,000 observations and 50 features plus one label, what would be the dimensions of X_train, y_train, X_test, and y_test? Assume a train/test split of 75%/25%.

- (•) • X_train: (7500, 50)<br>• y_train: (7500, )<br>• X_test: (2500, 50)<br>• y_test: (2500, )
- ( ) • X_train: (2500, )<br>• y_train: (2500, 50)<br>• X_test: (7500, )<br>• y_test: (7500, 50)
- ( ) • X_train: (2500, 50)<br>• y_train: (2500, )<br>• X_test: (7500, 50)<br>• y_test: (7500, )
- ( ) • X_train: (10000, 28)<br>• y_train: (10000, )<br>• X_test: (10000, 12)<br>• y_test: (10000, )
- ( ) • X_train: (10000, 50)<br>• y_train: (10000, )<br>• X_test: (10000, 50)<br>• y_test: (10000, )