Module 1 Quiz

1. Select the option that correctly completes the sentence: 1 point

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

   - ( ) Unsupervised Learning
   - (•) Supervised Learning
   - ( ) Density Estimation
   - ( ) Clustering

2. Select the option that correctly completes the sentence: 1 point

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

   - ( ) Classification
   - ( ) Regression
   - (•) Unsupervised Learning
   - ( ) Supervised Learning

3. Select the option that correctly completes the sentence: 1 point

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

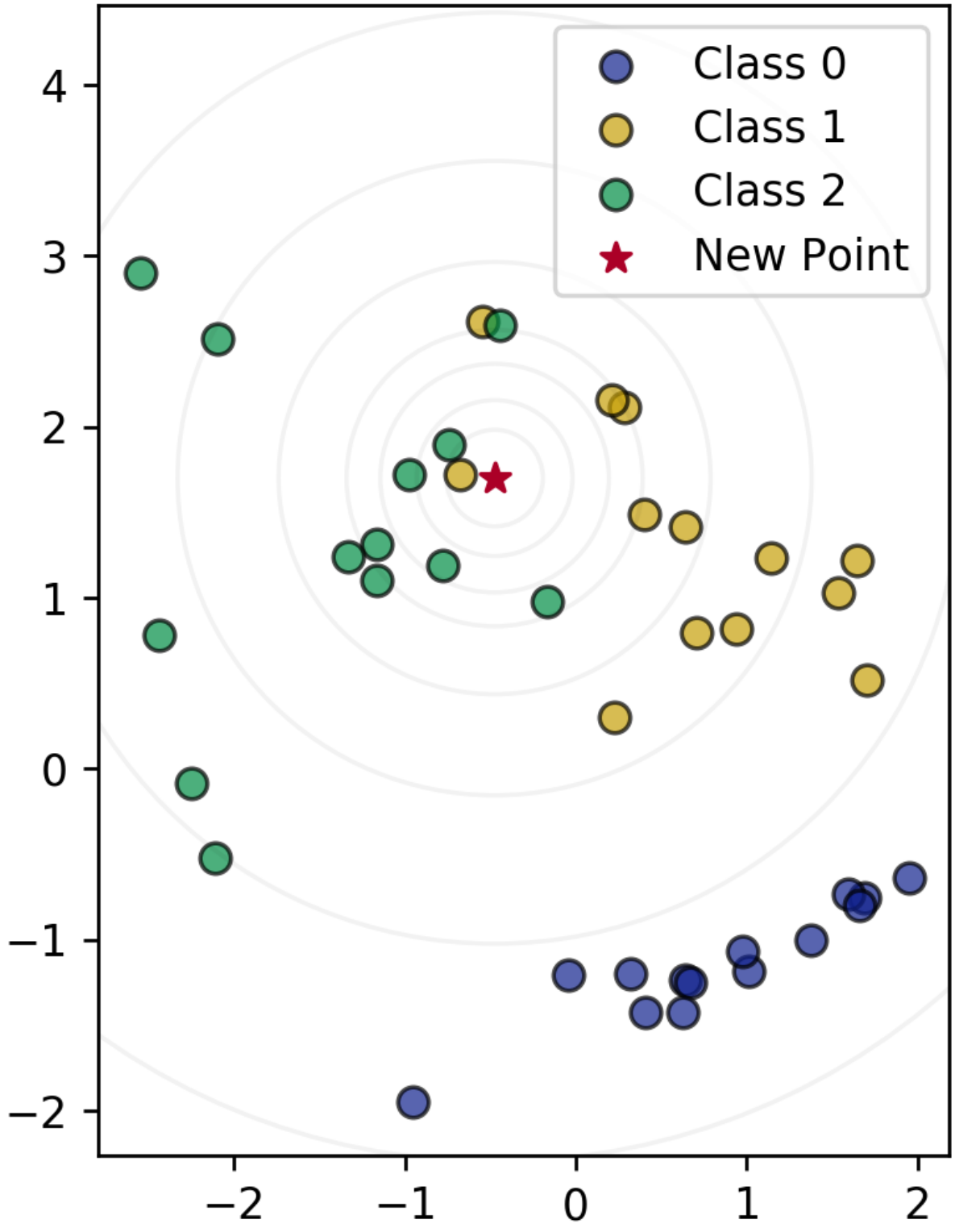
   - ( ) Regression
   - ( ) Feature Extraction
   - ( ) Clustering
   - (•) Classification

4. Select the option that correctly completes the sentence: 1 point

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

   - ( ) Clustering
   - ( ) Classification
   - ( ) Feature Extraction
   - (•) Regression

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? 1 point



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

6. Which of the following is true for the nearest neighbor classifier (Select all that apply): 1 point

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

7. Why is it important to examine your dataset as a first step in applying machine learning? (Select all that apply): 1 point

- ☑ 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

8. The key purpose of splitting the dataset into training and test sets is: 1 point

- ○ To reduce the amount of labelled data needed for evaluating classifier accuracy
- ○ 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
- ○ To speed up the training process

9. The purpose of setting the random_state parameter in train_test_split is: (Select all that apply) 1 point

- ☐ To avoid predictable splitting 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 make experiments easily reproducible by always using the same partitioning of the data

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%. 1 point

- ◉
  - X_train: (7500, 50)
  - y_train: (7500,)
  - X_test: (2500, 50)
  - y_test: (2500,)
- ○
  - X_train: (10000, 50)
  - y_train: (10000,)
  - X_test: (10000, 50)
  - y_test: (10000,)
- ○
  - X_train: (2500, 50)
  - y_train: (2500,)
  - X_test: (7500, 50)
  - y_test: (7500,)
- ○
  - X_train: (2500,)
  - y_train: (2500, 50)
  - X_test: (7500,)
  - y_test: (7500, 50)
- ○
  - X_train: (10000, 28)
  - y_train: (10000,)
  - X_test: (10000, 12)
  - y_test: (10000,)