

Chapter 1 & 2 Concept Test

Due Apr 1 at 12pm**Points** 1**Questions** 5**Time Limit** None

Instructions

Read the chapter, review the pre-class material, then take this concept test

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	11 minutes	1 out of 1

Score for this quiz: **1** out of 1

Submitted Apr 1 at 10:34am

This attempt took 11 minutes.

Question 1

0 / 0 pts

Perform the following by hand (do not use any software to assist you)

Given A is the matrix $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and B is the matrix $\begin{bmatrix} 9 & 8 \\ 7 & 6 \end{bmatrix}$, compute the matrix multiplication: $A' \times B$. Here A' means the transpose of A.

☐ $\begin{bmatrix} 25 & 19 \\ 59 & 45 \end{bmatrix}$

☒ $\begin{bmatrix} 30 & 26 \\ 46 & 40 \end{bmatrix}$

☐ $\begin{bmatrix} 10 & 10 \\ 10 & 10 \end{bmatrix}$

☐ $\begin{bmatrix} 33 & 50 \\ 25 & 38 \end{bmatrix}$

Correct!

Question 2**0 / 0 pts**

Assume your feature values are contained in matrix X . Suppose you want to report the 10th feature of the 75th observation in the data. What matrix index pair should you use?

Correct!☒ $X(75,10)$ ☐ $X(10,75)$ ☐ $X(75)$ ☐ $X(10)$ **Question 3****0 / 0 pts**

What kinds of research questions are appropriate for using machine learning (select all that apply)

Correct!☒ Building a spam filter using samples of regular and spam emails.**Correct!**

Given a set of home sales information, determining what combination of housing features (number of bedrooms, square footage, zip code) are most related to the sales price of the home.



Given a tic-tac-toe board state, determining which move to make next in a game of tic-tac-toe



Given a set of graphs, determining the minimum spanning tree for each graph.

Question 4**0 / 0 pts**

In K-nearest neighbors on a dataset which is not linearly separable, as K is increased beyond 1, what happens to the class decision boundary?

You Answered

- ☒ The decision boundary approaches a straight line through the data

While this could happen in some datasets which are linearly separable, it is not a general trend in all datasets which are not linearly separable. In general there is no reason for KNN's decision boundary to become linear unless the data is linearly separable



The decision boundary becomes more chaotic (less smooth) and is more likely to separate single datapoints from each other if they are in different classes

Correct Answer

The decision boundary becomes more smooth (less chaotic) and is less likely to separate single datapoints from each other, even if they are in different classes



The decision boundary becomes a small-radius circle around each point such that each datapoint is separated from each other datapoint.

Question 5**1 / 1 pts**

Please answer the following questions in text form. Be specific - wherever possible, include page numbers, filenames, concept names to help your instructor understand what you are referring to:

1. What was the most interesting concept in the material you reviewed for this pre-class assignment?
2. What was the most confusing aspect of the material you reviewed?

Your Answer:

1. The section on K-nearest neighbors was the most interesting thing
2. Not totally clear on how the Bayes classifier works from section 2.2.3 p. 37-38

Quiz Score: **1** out of 1