(!) This quiz has been regraded; your score was not affected.

## Quiz 1

**Due** Sep 11 at 2:09pm **Points** 10 **Questions** 5 **Available** until Sep 11 at 2:09pm **Time Limit** 7 Minutes

This quiz was locked Sep 11 at 2:09pm.

## **Attempt History**

	Attempt	Time	Score	Regraded
LATEST	Attempt 1	6 minutes	8 out of 10	8 out of 10

Score for this quiz: **8** out of 10 Submitted Sep 11 at 2:09pm This attempt took 6 minutes.

## Question 1 Original Score: 2 / 2 pts Regraded Score: 2 / 2 pts ① This question has been regraded. Suppose we are using linear regression to predict y using two features x1 and x2. If we include an additional feature x3 and run the regression again, which of the following observations is possible Ou Answered ① The R-square for the regression will either stay the same or increase. ① The adjusted R2 for the regression will either stay the same or increase. ② Both. ② None of the two.

Question 2 0 / 2 pts

Consider the problem of fitting polynomial models on a fixed training set and evaluating their performance on a fixed test set. In particular, let us fit polynomial models from degrees 0 to 20 on the same training set and plot the expected training mean square error against the degree of the model. Similarly, for evaluation, we use a fixed testing set and plot the expected testing mean square error against the degree of the model. Which of the following observations must be true for our plots?

ou Answered

The Expected Mean square error on the training data is non-decreasing

orrect Answer

- The Expected Mean square error on the training data is non-increasing
- The Expected Mean square error on the testing data is non-increasing.
- The Expected Mean square error on the testing data is non-decreasing

Question 3 2 / 2 pts

For Lasso regression, if the regularization tuning parameter lambda is set to a high value, which of the following is true:

The loss function stays the same as the OLS loss function.

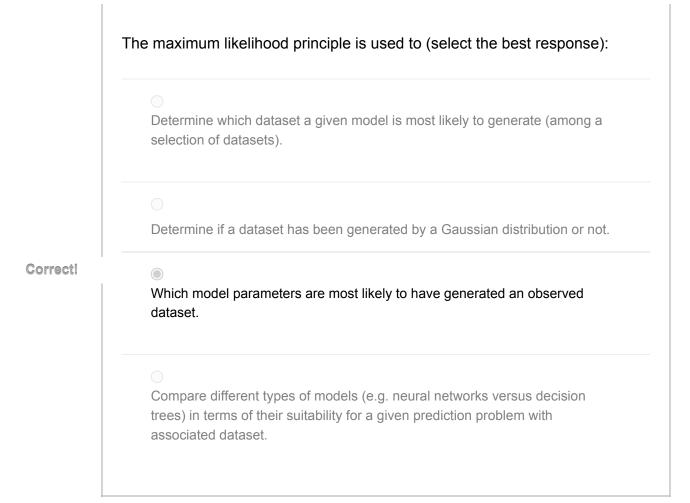
Correct!

It tends to drive some parameters (weights) to zero.

It will always yield a higher MSE than the corresponding unregularized model.

O It will yield a lower MSE than the corresponding unregularized model.

Question 4 2 / 2 pts



Question 5 2 / 2 pts

The true loss/error (aka Generalization Error) for a given problem is defined with respect to which dataset or data distribution?

## Your Answer:

The true loss/error (also known as Generalization Error) for a given problem is defined with respect to the entire data distribution from which the samples are drawn. This data distribution represents the universe of possible data points for the given problem.

In machine learning and statistics, we often work with a sample of data (training set, validation set, test set) drawn from this larger distribution. The goal is to generalize well to new, unseen data points from this distribution.

In summary, the Generalization Error is defined with respect to the entire data distribution of the problem, not just a specific dataset.

Quiz Score: 8 out of 10