Answers:

1) Both R-squared and Residual Sum of Squares (RSS) are commonly used measures of goodness of fit for regression models, but they serve different purposes and have different strengths and weaknesses.
   R-squared is a measure of the proportion of variance in the dependent variable that is explained by the independent variables. It ranges from 0 to 1, with higher values indicating a better fit. R-squared is a popular measure of fit because it is easy to interpret and can be compared across different models.
   Residual Sum of Squares (RSS) is a measure of the difference between the observed values of the dependent variable and the predicted values from the regression model. It is calculated as the sum of the squared residuals (the differences between the observed and predicted values). RSS is a useful measure of fit because it quantifies the overall error of the model.

However, RSS is more difficult to interpret than R-squared, and it is not directly comparable across different models. Also, RSS can be affected by outliers, which can skew the results.

1) Regularization is a technique used in machine learning to prevent overfitting, which occurs when a model is too complex and fits the training data too closely, resulting in poor performance on new, unseen data. Overfitting can happen when a model has too many parameters or when the model is too flexible, allowing it to fit the noise in the training data.

Regularization adds a penalty term to the loss function, which discourages the model from learning overly complex patterns in the training data. This penalty term is a function of the model parameters, and it encourages the model to learn simpler patterns that generalize better to new data.

There are two common types of regularization: L1 regularization (also known as Lasso regularization) and L2 regularization (also known as Ridge regularization). L1 regularization adds a penalty term proportional to the absolute value of the model parameters, while L2 regularization adds a penalty term proportional to the square of the model parameters.

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