1. R-squared (R^2) and Residual Sum of Squares (RSS) are both commonly used measures to assess the goodness of fit of a regression model, but they capture different aspects of model performance.

3. regularization is used for fitted the model,regularization reduce chances to overfitted model in machine learning.

4. Gini-Impurity index used for calculating by subtracting the sum of the squared probabilities.

5. Decision trees are prone to overfitting when they capture noise in the data. Pruning and setting appropriate stopping criteria are used to address this assumption.

6. Ensemble methods are techniques that create multiple models and then combine them to produce improved results

7. The bagging technique combines multiple models trained on different subsets of data, whereas boosting trains the model sequentially, focusing on the error made by the previous model.

8. The out-of-bag error is the average error for each calculated using predictions from the trees that do not contain in their respective bootstrap sample.

9. K-Fold cross-Validation is a technique for evaluating predictive models.

10.The only way to determine these is through multiple experiments, where you pick a set of hyperparameters and run them through your model. This is called hyperparameter tuning.

11. If the learning rate is too high, the algorithm may overshoot the minimum, and if it is too low, the algorithm may take too long to converge. Overfitting: Gradient descent can overfit the training data if the model is too complex or the learning rate is too high