1. C
2. A
3. B
4. B
5. C
6. B
7. A
8. A
9. B,D
10. A,C
11. A,B,D
12. A,C,D
13. A,B

14th

Linear regression is a fundamental technique in machine learning that is used to model the relationship between two variables, typically referred to as the dependent variable (Y) and the independent variable (X). In linear regression, the goal is to find a linear relationship between these two variables such that we can use X to predict Y.

The linear regression model is represented by the equation:

Y = b0 + b1X + e

Where:

- Y is the dependent variable, which we want to predict
- X is the independent variable
- b0 is the intercept, which represents the value of Y when X is 0
- b1 is the slope, which represents the change in Y for a unit change in X
- e is the error term, which represents the deviation of Y from the predicted value

To estimate the parameters b0 and b1, we use a method called least squares regression. This involves finding the values of b0 and b1 that minimize the sum of the squared errors between the predicted values and the actual values. Once we have estimated these parameters, we can use the model to predict the value of Y for any given value of X.

Linear regression can be used for both simple and multiple regression problems. In simple linear regression, we have one independent variable, whereas in multiple linear regression, we have multiple independent variables. Linear regression is widely used in many fields, including economics, finance, marketing, and social sciences.

15th

The main difference between simple linear regression and multiple linear regression is the number of independent variables used in the regression model.

In simple linear regression, we have one independent variable (X) and one dependent variable (Y), and we are trying to find the linear relationship between X and Y. The equation for simple linear regression is:

$Y = b_0 + b_1X + e$

where Y is the dependent variable, X is the independent variable, b_0 is the intercept, b_1 is the slope, and e is the error term.

In multiple linear regression, we have multiple independent variables (X1, X2, X3, etc.) and one dependent variable (Y), and we are trying to find the linear relationship between all of the independent variables and Y. The equation for multiple linear regression is:

$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + ... + b_nX_n + e$

where Y is the dependent variable, X1, X2, X3, etc. are the independent variables, b_0 is the intercept, b_1, b_2, b_3, etc. are the slopes, and e is the error term.

In other words, simple linear regression involves only one independent variable, while multiple linear regression involves two or more independent variables. Multiple linear regression is more complex than simple linear regression, as it requires estimating the slopes for each independent variable in the model. However, multiple linear regression can provide more accurate predictions of the dependent variable since it accounts for the effects of multiple independent variables on the dependent variable.