CS 4375 - Quiz 1

1. Ability to categorize correctly new examples that differ from those used for training is known as

    A. Generalization

    B. Visualization

    C. Clustering

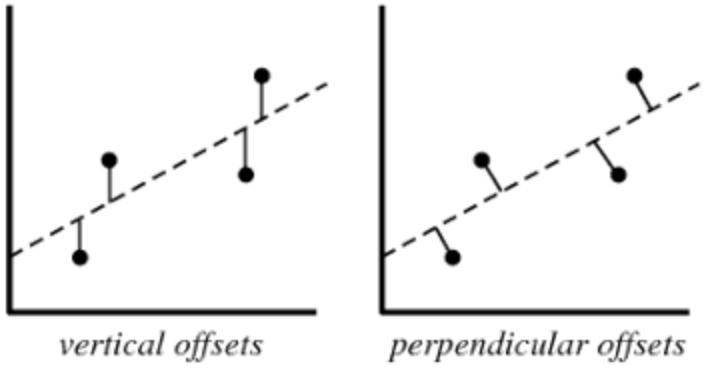
    D. Density Estimation

2. We can also compute the coefficient of linear regression with the help of an analytical method called “Normal Equation”. Which of the following is/are true about Normal Equation?

    1. We don’t have to choose the learning rate
    2. It becomes slow when number of features is very large
    3. There is no need to iterate

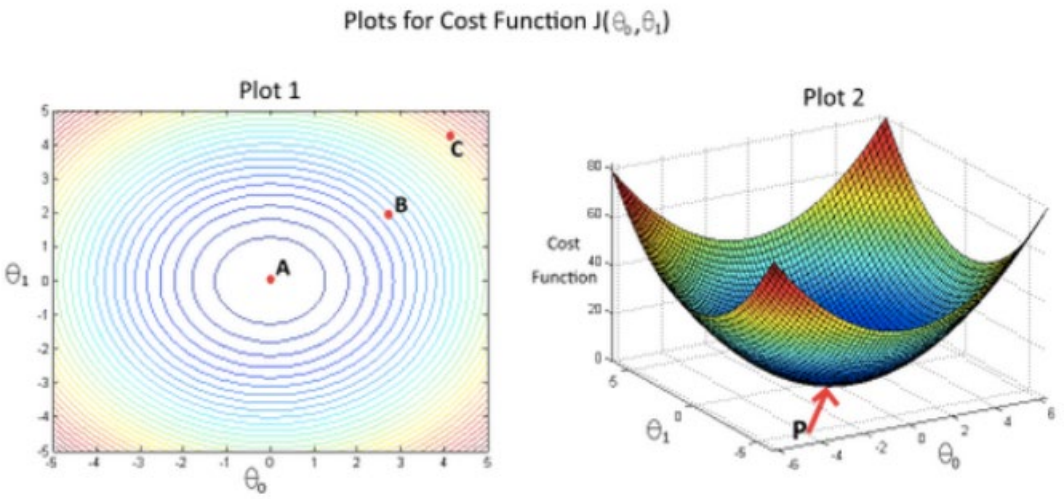
    A. 1 and 2
    B. 1 and 3
    C. 2 and 3
    D. 1,2 and 3

3. Which of the following offsets, do we use in linear regression’s least square line fit? Suppose horizontal axis is independent variable and vertical axis is dependent variable.



A. Vertical offset
B. Perpendicular offset
C. Both, depending on the situation
D. None of above

4. In this figure, the cost function $J(\vartheta_0, \vartheta_1)$ has been plotted against ϑ_0 and ϑ_1 as shown in plot 2. The contour plot for the same function is shown in plot 1. Based on the figure choose the correct options (Check all that apply)



   A. Point P (the global minimum of plot 2) corresponds to point A of plot 1.

   B. If we start from point B, gradient descent with a well-chosen learning rate will eventually help us reach at or near point C, as the value of cost function $J(\vartheta_0, \vartheta_1)$ is minimum at point C.

   C. Point P (the global minimum of plot 2) corresponds to point C of plot 1.

   D. If we start from point B, gradient descent with a well-chosen learning rate will eventually help us reach at or near point A, as the value of cost function $J(\vartheta_0, \vartheta_1)$ is maximum at point A.

   E. If we start from point B, gradient descent with a well-chosen learning rate will eventually help us reach at or near point A, as the value of cost function $J(\vartheta_0, \vartheta_1)$ is minimum at point A.

5. Suppose you are working on weather prediction, and your weather station makes one of three predictions for each day's weather: Sunny, Cloudy or Rainy. You'd like to use a learning algorithm to predict tomorrow's weather. Would you treat this as a regression problem.

   A. True

   B. False