

Quiz 1: Data Science**Total Marks: 10**

2017-02-14

Name: -----

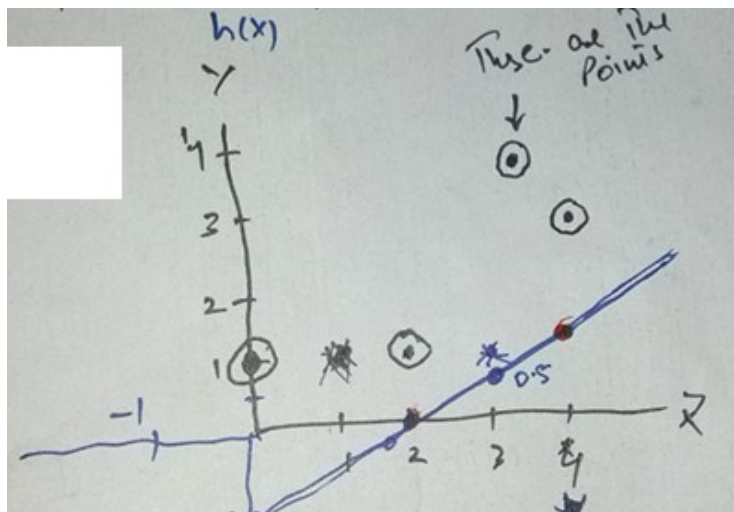
Registration #:

Question 1: (3 marks)**Solution:**

$$\begin{aligned} J(0, 1) &? \\ &= \frac{1}{2 \times 4} \times ((3-4)^2 + (2-1)^2 + (4-3)^2 + (0-1)^2) \\ &= \frac{1}{2} (1 + 1 + 1 + 1) = \frac{4}{2} = 2 \end{aligned}$$

Question 2: (3 marks)**Solution:**

$$h_0(4) = -1 + 0.5 \times 4 = -1 + 2 = 1$$

Solution Part 1 and Part II:**Solution Part 3:**

$$\begin{aligned} y &= mx \quad = m = \frac{y}{x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - (-1)}{4 - 0} = \frac{1+1}{4} = \frac{2}{4} = 0.5 \\ \text{Slope is } &\underline{0.5}. \end{aligned}$$

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-----**Registration #:****Question 3: (2 marks)****Solution:**

$$\Theta = 6 \times 1$$

$$X = 23 \times 1$$

$$y = 23 \times 6$$

Question 4: (1 mark)

d. The normal equation, since it provides an efficient way to directly find the solution.

Question 5: (1 mark)

Find the local optimum (either maximum or minimum) of function **$g(x) = x^3 - 9x^2 + 15x - 7$** .

(Note: you can use calculus to calculate the local optimum for this function)

Solution: Take derivative and just find value of X.