Linear Regression with One Variable

Quiz, 5 questions

5/5 points (100%)

✔ Congratulations! You passed!

Next Item

Question Responses

- ✔ Question 1
- ✔ Question 2
- ✔ Question 3
- ✔ Question 4
- ✔ Question 5

Review Materials

- **Cost Function**
- **Gradient Descent**
- **Model Representation**
- **Cost Function - Intuition II**
- **Gradient Descent Intuition**

✔ 1 / 1 points

Concepts

★ Define the notation used in this course

Model Representation (01:52)

Linear Regression with One Variable

Quiz, 5 questions

5/5 points (100%)

1.

Consider the problem of predicting how well a student does in her second year of college/university, given how well she did in her first year.

Specifically, let x be equal to the number of "A" grades (including A-. A and A+ grades) that a student receives in their first year of college (freshmen year). We would like to predict the value of y, which we define as the number of "A" grades they get in their second year (sophomore year).

Here each row is one training example. Recall that in linear regression, our hypothesis is $h_\theta(x) = \theta_0 + \theta_1 x$, and we use m to denote the number of training examples.

x	y
5	4
3	4
0	1
4	3

For the training set given above (note that this training set may also be referenced in other questions in this quiz), what is the value of m? In the box below, please enter your answer (which should be a number between 0 and 10).

✔ 1 / 1 points

Concepts

★ Define the cost function for linear regression

▶ **Cost Function (02:34)**

5/5 points (100%)

2.
For this question, assume that we are

using the training set from Q1. Recall our definition of the

cost function was $J(\theta_0, \theta_1) = \frac{1}{2m} \sum_{i=1}^{m} \left(h_\theta(x^{(i)}) - y^{(i)}\right)^2$.

What is $J(0,1)$? In the box below,

please enter your answer (Simplify fractions to decimals when entering answer, and '.' as the decimal delimiter e.g., 1.5).

✔ 1 / 1 points

Concepts

- ★ Compare the predictions of a hypothesis functions based on different parameters
  - ⊙ **Cost Function (00:47)**
- ★ Express the hypothesis function for linear regression
  - ⊙ **Model Representation (04:40)**

3. Suppose we set $\theta_0 = -1, \theta_1 = 0.5$. What is $h_\theta(4)$?

✔ 1 / 1 points

Concepts

- ★ Recognize that gradient descent can result in different local optimum
  - ⊙ **Gradient Descent (04:14)**
- ★ Explain the different behaviors of gradient descent when the learning rate is too small or too big
  - ⊙ **Gradient Descent Intuition (05:31)**

4.

Let f be some function so that $f(\theta_0, \theta_1)$ outputs a number. For this problem, f is some arbitrary/unknown smooth function (not necessarily the cost function of linear regression, so f may have local optima).

Suppose we use gradient descent to try to minimize $f(\theta_0, \theta_1)$ as a function of θ_0 and θ_1. Which of the following statements are true? (Check all that apply.)

1 / 1 points

Concepts

★ Illustrate the relationship between the hypothesis and cost functions with multiple parameters

Cost Function - Intuition II (00:31)

5.
Suppose that for some linear regression problem (say, predicting housing prices as in the lecture), we have some training set, and for our training set we managed to find some θ_0, θ_1 such that $J(\theta_0, \theta_1) = 0$.

Which of the statements below must then be true? (Check all that apply.)