Quiz 4

Linear Regression with Multiple Variables

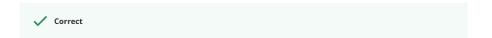
1. Suppose *m*=4 students have taken some class, and the class had a midterm exam and a final exam. You have collected a dataset of their scores on the two exams, which is as follows:

1/1 point

midterm exam	(midterm exam)^2	final exam
89	7921	96
72	5184	74
94	8836	87
69	4761	78

You'd like to use polynomial regression to predict a student's final exam score from their midterm exam score. Concretely, suppose you want to fit a model of the form $h_{\theta}(x) = \theta_0 + \theta_1 x_1 + \theta_2 x_2$, where x_1 is the midterm score and x_2 is (midterm score)^2. Further, you plan to use both feature scaling (dividing by the "max-min", or range, of a feature) and mean normalization.

What is the normalized feature $x_2^{(4)}$? (Hint: midterm = 69, final = 78 is training example 4.) Please round off your answer to two decimal places and enter in the text box below.



2. You run gradient descent for 15 iterations

with lpha=0.3 and compute

 $J(\theta)$ after each iteration. You find that the

value of $J(\theta)$ decreases slowly and is still

decreasing after 15 iterations. Based on this, which of the

following conclusions seems most plausible?



1 / 1 point

3.	Suppose you have $m=14$ training examples with $n=3$ features (excluding the additional all-ones feature for the intercept term, which you should add). The normal equation is $\theta=(X^TX)^{-1}X^Ty$. For the given values of m and n , what are the dimensions of θ , X , and y in this equation?	1/1 point
	✓ Correct	
4.	Suppose you have a dataset with $m=1000000$ examples and $n=200000$ features for each example. You want to use multivariate linear regression to fit the parameters θ to our data. Should you prefer gradient descent or the normal equation?	1/1 point
	✓ Correct	
5.	Which of the following are reasons for using feature scaling?	1/1 point
	✓ Correct	