

Welcome

- ✓ **Video:** Welcome to Machine Learning!
1 min
- ✓ **Reading:** Machine Learning Honor Code
8 min

Introduction

- ✓ **Video:** Welcome
6 min
- ✓ **Video:** What is Machine Learning?
7 min
- ✓ **Reading:** What is Machine Learning?
5 min
- ✓ **Reading:** How to Use Discussion Forums
4 min
- ✓ **Video:** Supervised Learning
12 min
- ✓ **Reading:** Supervised Learning
4 min
- ✓ **Video:** Unsupervised Learning
14 min
- ✓ **Reading:** Unsupervised Learning
3 min
- ✓ **Reading:** Who are Mentors?
3 min
- ✓ **Reading:** Get to Know Your Classmates
8 min
- ✓ **Reading:** Frequently Asked Questions
11 min

Review

- ✓ **Reading:** Lecture Slides
20 min
- ✓ **Quiz:** Introduction
5 questions

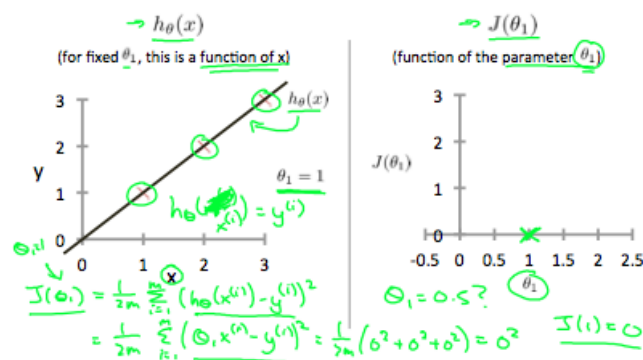
Model and Cost Function

- ✓ **Video:** Model Representation
8 min
- ✓ **Reading:** Model Representation

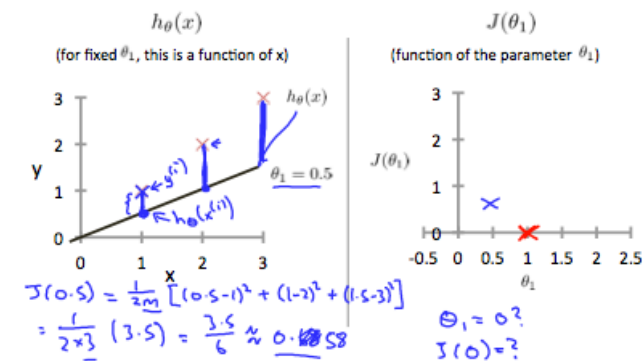
Cost Function - Intuition I

If we try to think of it in visual terms, our training data set is scattered on the x-y plane. We are trying to make a straight line (defined by $h_{\theta}(x)$) which passes through these scattered data points.

Our objective is to get the best possible line. The best possible line will be such so that the average squared vertical distances of the scattered points from the line will be the least. Ideally, the line should pass through all the points of our training data set. In such a case, the value of $J(\theta_0, \theta_1)$ will be 0. The following example shows the ideal situation where we have a cost function of 0.



When $\theta_1 = 1$, we get a slope of 1 which goes through every single data point in our model. Conversely, when $\theta_1 = 0.5$, we see the vertical distance from our fit to the data points increase.



This increases our cost function to 0.58. Plotting several other points yields to the following graph:

