**Simplified Cost Function and Gradient Descent**

**Note:** [6:53 - the gradient descent equation should have a 1/m factor]

We can compress our cost function's two conditional cases into one case:



Notice that when y is equal to 1, then the second term will be zero and will not affect the result. If y is equal to 0, then the first term  will be zero and will not affect the result.

We can fully write out our entire cost function as follows:



A vectorized implementation is:

****

**Gradient Descent**

Remember that the general form of gradient descent is:



We can work out the derivative part using calculus to get:



Notice that this algorithm is identical to the one we used in linear regression. We still have to simultaneously update all values in theta.

A vectorized implementation is:

