**Derivative the Gradient Descent of Linear and Logistic Regression**

Linear Regression and Logistic Regression are most useful models in Machine Learning field. We need to fit these models to predicting, forecasting, classification or reducing error. This why it is very essential to calculate gradient descent, cost function. I am don’t writing this blog to elaborate on the Linear and Logistic Regression. I will explain the derivate of the cost function for gradient descent. Let’s start,

We know,

**Linear equation:**

**Cost Function of Linear equation:**

**Gradient Descent of Linear equation:**

*[Note: know that, the derivate formula is ]*

*[Here is the derivate form of gradient descent]*

**Let’s derivate gradient descent of the logistic regression.**

**Logistic equation:**

**Simplified Cost Function:**

**Gradient Descent of Logistic Regression:**

**Let simplified the two expression.**

*[Using this Formula: ]*

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**And,**

[ Note: ]

**Now plugging two simplified expression,**

Using the formula:

Finally, we got our simplified formula to doing derivation.