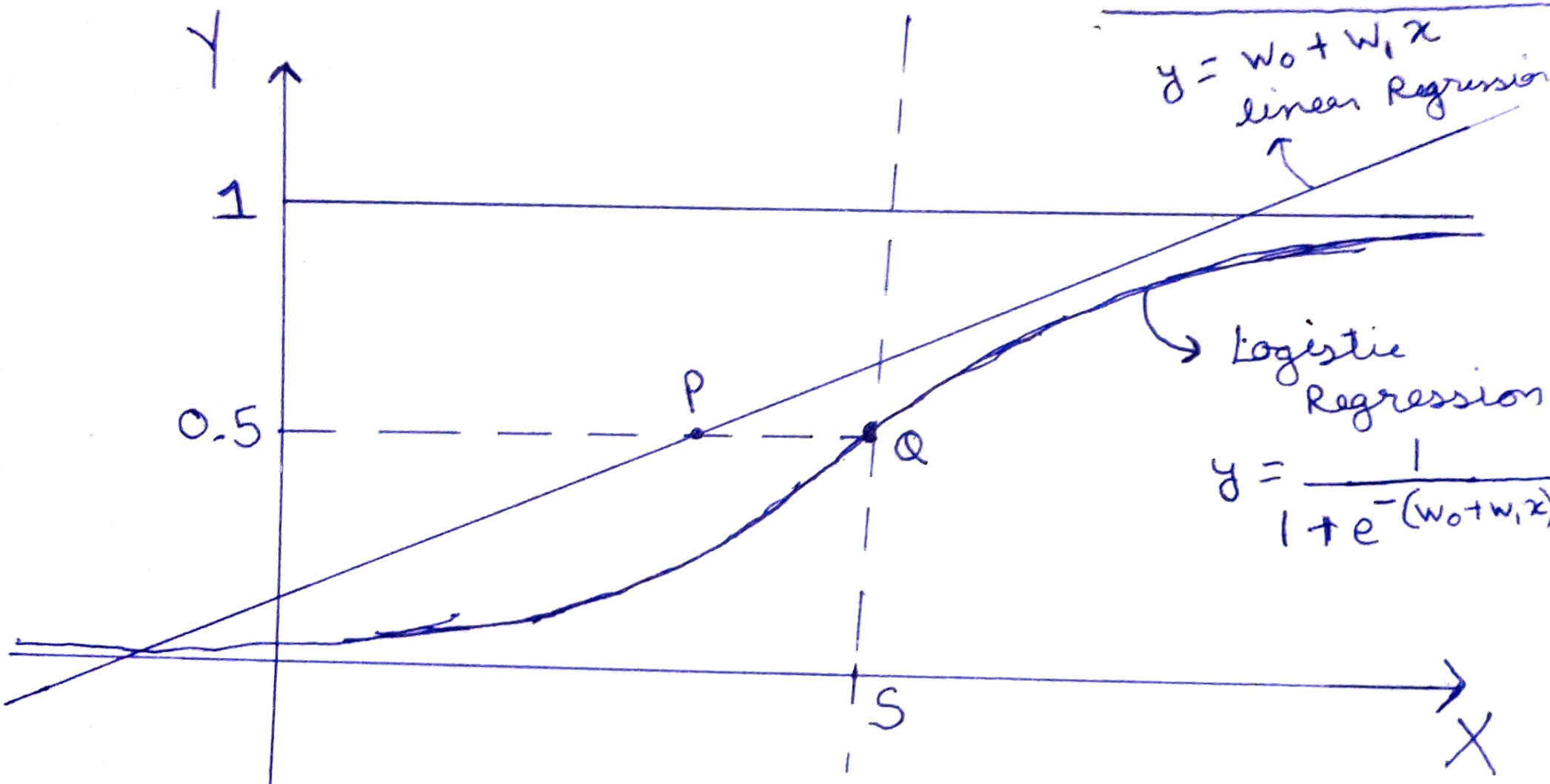
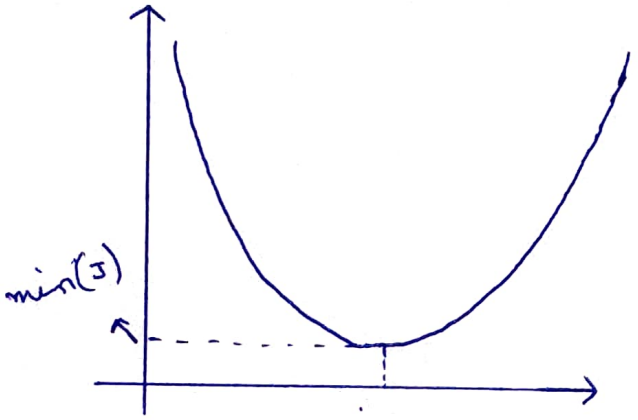
# Machine Learning

Aniruddh Arora
IIT2019003



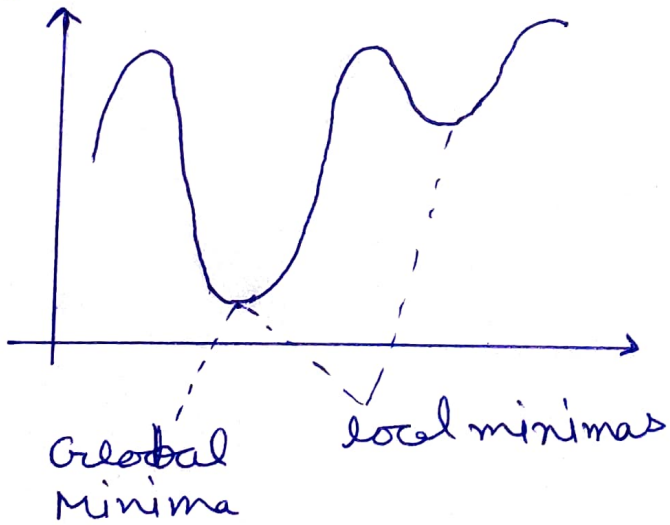
In linear Regression, we use 'Mean Squared Error' for the cost.

$$J = \frac{\sum_{i=1}^{n} (\hat{Y}_i - Y_i)^2}{n}$$




In logistic Regression, $Y_i$ is a non-linear function $\left(\hat{Y} = \frac{1}{1+e^{-z}}\right)$

It will give a non convex function:



Output of linear Regression lies between (0,1) while output of Logistic Regression lies between $(-\infty, \infty)$.

Also, It can be observed that line S is divider of classification and logistic Regression will give correct prediction.

Now due to no limit of points on $y=0$ and $y=1$, Linear Regression is deviating from line S and will not give correct prediction between points P and Q.