

Difference with linear regression -> output for continuous independent variables  
 Logistic regression -> Categorical output

### Example of Binary logistic regression

**Fake news detection, whether someone has diabetes or not**

Input: Facebook post/status

Output: whether the status is fake or real (here the output is binary)

### Hypothesis function sigmoid function

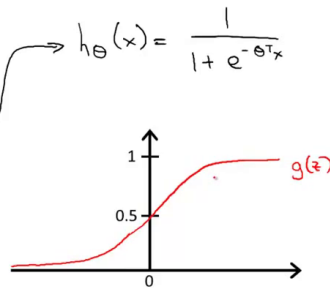
**Logistic Regression Model**

Want  $0 \leq h_{\theta}(x) \leq 1$

$$h_{\theta}(x) = g(\theta^T x)$$

$$\rightarrow g(z) = \frac{1}{1 + e^{-z}}$$

→ Sigmoid function  
 → Logistic function



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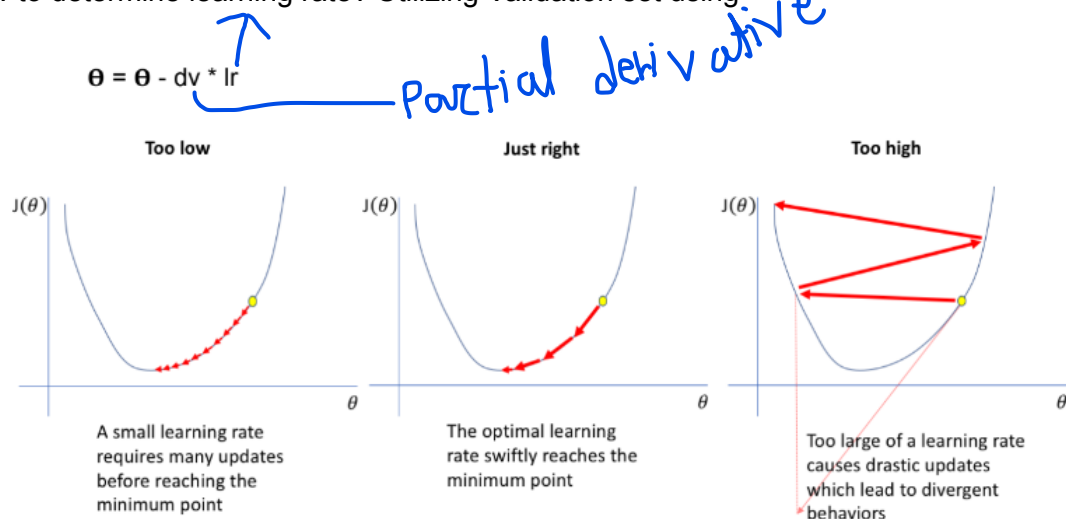
How to get the theta?

**Loss function** will determine How good is the theta?

What's the usage of learning rate?

We choose learning rate arbitrarily first.

How to determine learning rate? Utilizing Validation set using



Weights are updated using the training set