$$h_\theta(x) = g\left(\theta_0 + \theta_1 x_1 + \theta_2 x_2 + \theta_3 x_1^2 + \theta_4 x_1^2 x_2 \right.$$
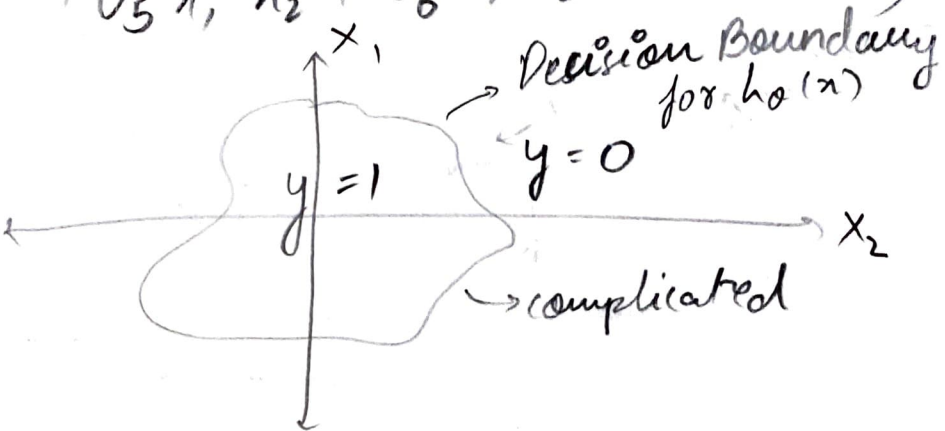$$\left. + \theta_5 x_1^2 x_2^2 + \theta_6 x_1 x_2 + \cdots - - \right)$$

Decision Boundary for $h_\theta(x)$

$y = 0$

$y = 1$

complicated

Training Set: $\left\{ (x^{(1)}, y^{(1)}), (x^{(2)}, y^{(2)}), \cdots, (x^{(m)}, y^{(m)}) \right\}$

m examples: $x \in \begin{bmatrix} x_0 \\ x_1 \\ \vdots \\ x_n \end{bmatrix}_{n+1}$ $\boxed{x_0 = 1, \; y \in \{0, 1\}}$

$$h_\theta(x) = \frac{1}{1 + e^{-\theta^T x}}$$

Cost func^n in Linear Regression $\Rightarrow J(\theta) = \frac{1}{m} \sum_{i=1}^{m} \frac{1}{2} \left(h_\theta(x^{(i)}) - y^{(i)} \right)$

let, $Cost\left(h_\theta(x^{(i)}), y^{(i)} \right) = \frac{1}{2} \left(h_\theta(x^{(i)}) - y^{(i)} \right)^2$

OR

$$Cost\left(h_\theta(x), y \right) = \frac{1}{2} \left(h_\theta(x) - y \right)^2$$
$$[\text{for linear Regression}]$$