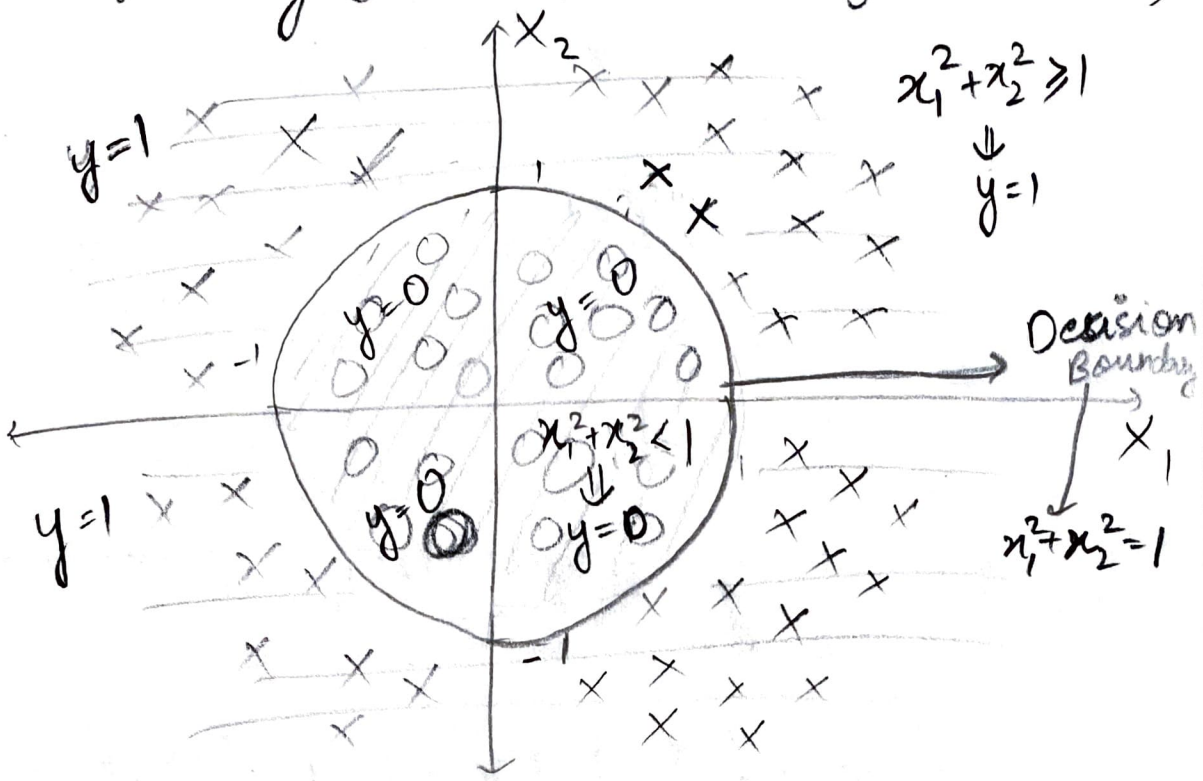
Non-linear decision boundaries

Let $h_\theta(x) = g(\theta_0 + \theta_1 x_1 + \theta_2 x_2 + \theta_3 x_1^2 + \theta_4 x_2^2)$



If $\theta_0 = -1, \theta_1 = 0, \theta_2 = 0, \theta_3 = 1, \theta_4 = 1$

$$\theta = \begin{bmatrix} -1 \\ 0 \\ 0 \\ 1 \\ 1 \end{bmatrix}$$

Predict:

① $y = 1 \Rightarrow -1 + x_1^2 + x_2^2 \geq 0$

$x_1^2 + x_2^2 \geq 1$

$x_1^2 + x_2^2 = 1$ is Eq^n of circle $((0,0); r = 1)$

② $y = 0 \Rightarrow -1 + x_1^2 + x_2^2 < 0$

$x_1^2 + x_2^2 < 1$

⊛ Decision Boundary is the property of parameters & $h_\theta(x)$ and not of training set