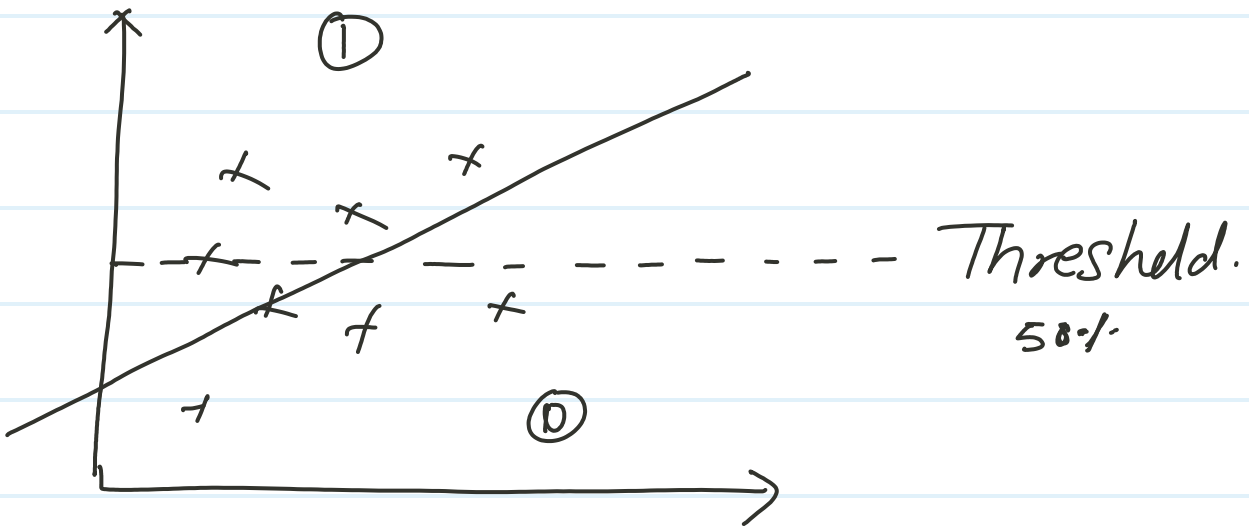
Logistic Regression

$$y = mx + c$$

$$h_\theta(x) = \theta_0 + \theta_1 x_1$$



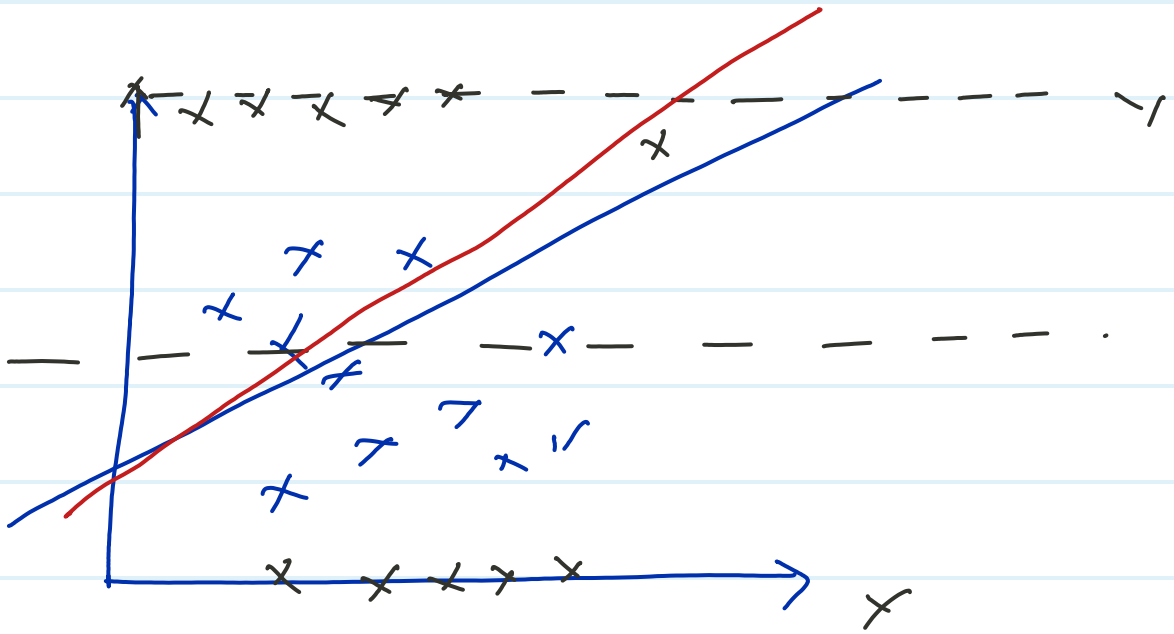
sigmoid function $\Rightarrow \sigma$

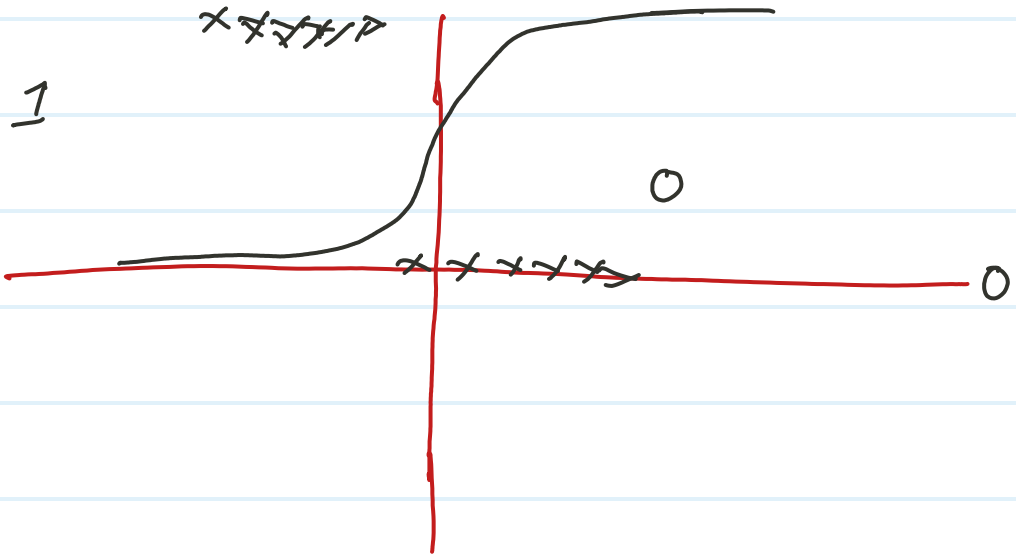
$$\sigma = \frac{1}{1 + e^{-z}}$$

$$h_\theta(x) = z$$

$$z = \theta_0 + \theta_1 x_1$$

$$\sigma = \frac{1}{1 + e^{-(\theta_0 + \theta_1 x_1)}}$$





Binary class — 0 / 1

multi class = 0 / 1 / 2 / 3 / - - -

performance metrics

1. Confusion metric
2. Accuracy
3. precision
4. Recall
5. F, Beta score

Actual

	T	F
T	TP	FP
F	FN	TN

Predicted

10

3	2
1	4

$$\frac{TP + TN}{TP + FP + FN + TN}$$

Accuracy

$$\Rightarrow \frac{3+4}{10} \Rightarrow \frac{7}{10}$$

0.7

$$\text{precision} = \frac{TP}{TP + FP} \Rightarrow \frac{3}{3+2}$$

$$= \frac{3}{5} \Rightarrow 0.6$$