

Model  $\rightarrow$  bag, bucket model.

$x \in X, y \in Y$

$D$

$x \rightarrow \phi(x)$   
bucket threshold of w.v.

Model  $\rightarrow$  set of reals  $\mathbb{R}$ .

Training  $\rightarrow$  Use  $D$  & fixed the threshold ( $t$ )

Inference  $\rightarrow x \rightarrow \phi(x) \begin{cases} > t & y=0 \\ \leq t & y=1 \end{cases}$



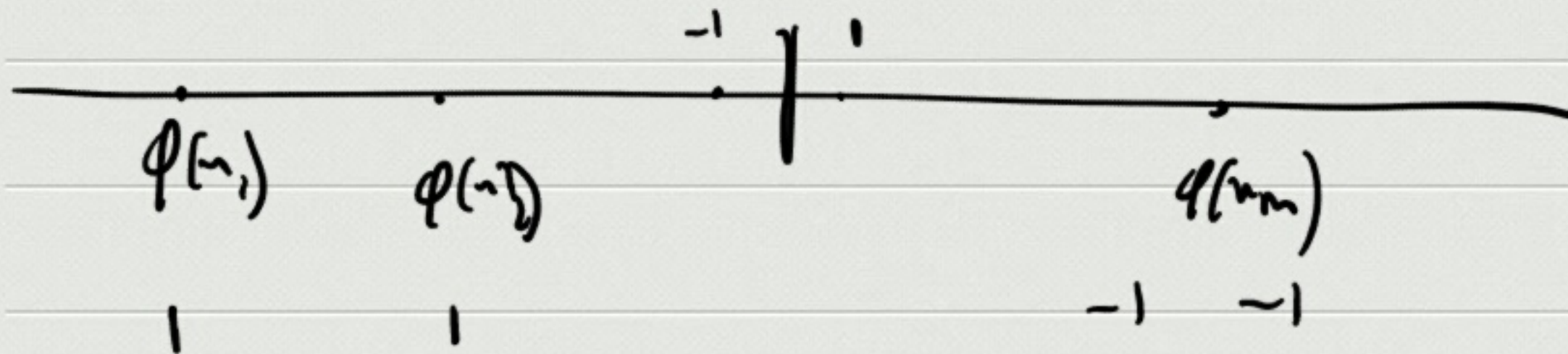
Binary classification  $Y = \{-1, 1\}$

Training Algorithm:

$\min_{b \in \mathbb{R}}$

$$\frac{1}{m} \sum_{i=1}^m \mathbb{1}_{\{\text{sign}(\phi(x_i) - b) \neq y_i\}}$$

$$\downarrow$$
$$\underline{\underline{P[\text{sign}(\phi(x) - b) \neq Y]}}$$





# Decision Tree

