

2. For equation 8.12: $\hat{f}(x) = \sum_b \lambda \hat{f}^b(x)$

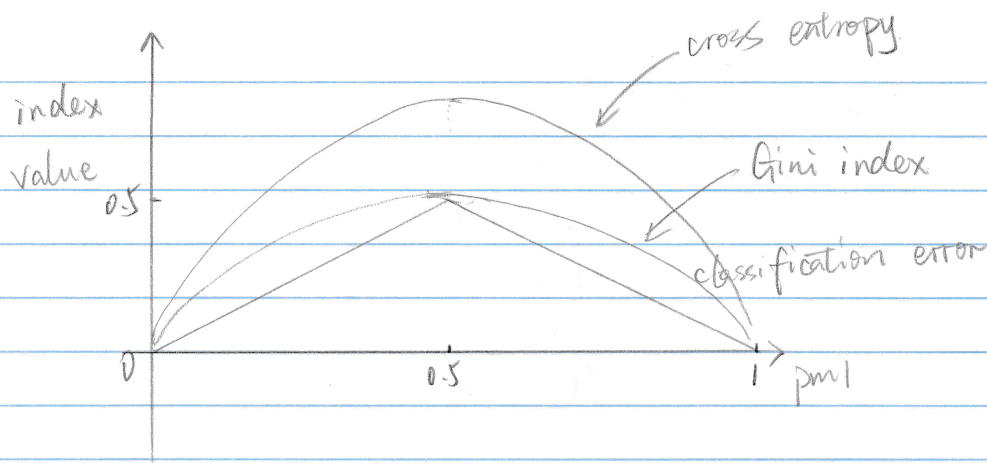
Let's regroup the right hand side by features:

$$\hat{f}(x) = \sum_{i=1}^P \lambda g(x_i)$$

where $g(x_i) = \sum_b \hat{f}^b(x_i)$

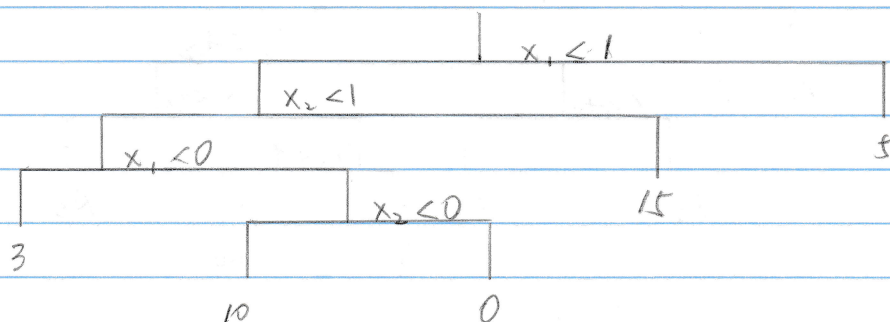
Then we re-define function $f_j(x_j)$ as: $f_j(x_j) = \lambda \sum_b \hat{f}^b(x_j)$
 Therefore $f(x) = \sum_b \lambda \hat{f}^b(x) = \sum_{j=1}^P f_j(x_j)$ is additive.

3.

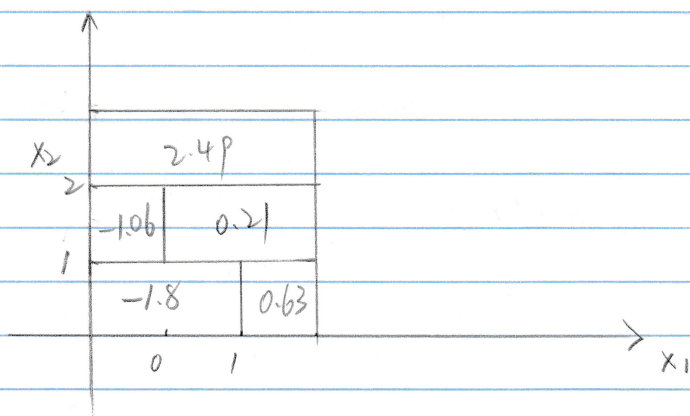


4.

a)



b)



↓

Majority vote: Red vote: 6 Green vote: 4
 \Rightarrow The predicted class is Red

Average Probability: $P(\text{Red} | x) = 0.45$
 \Rightarrow The predicted class is Green