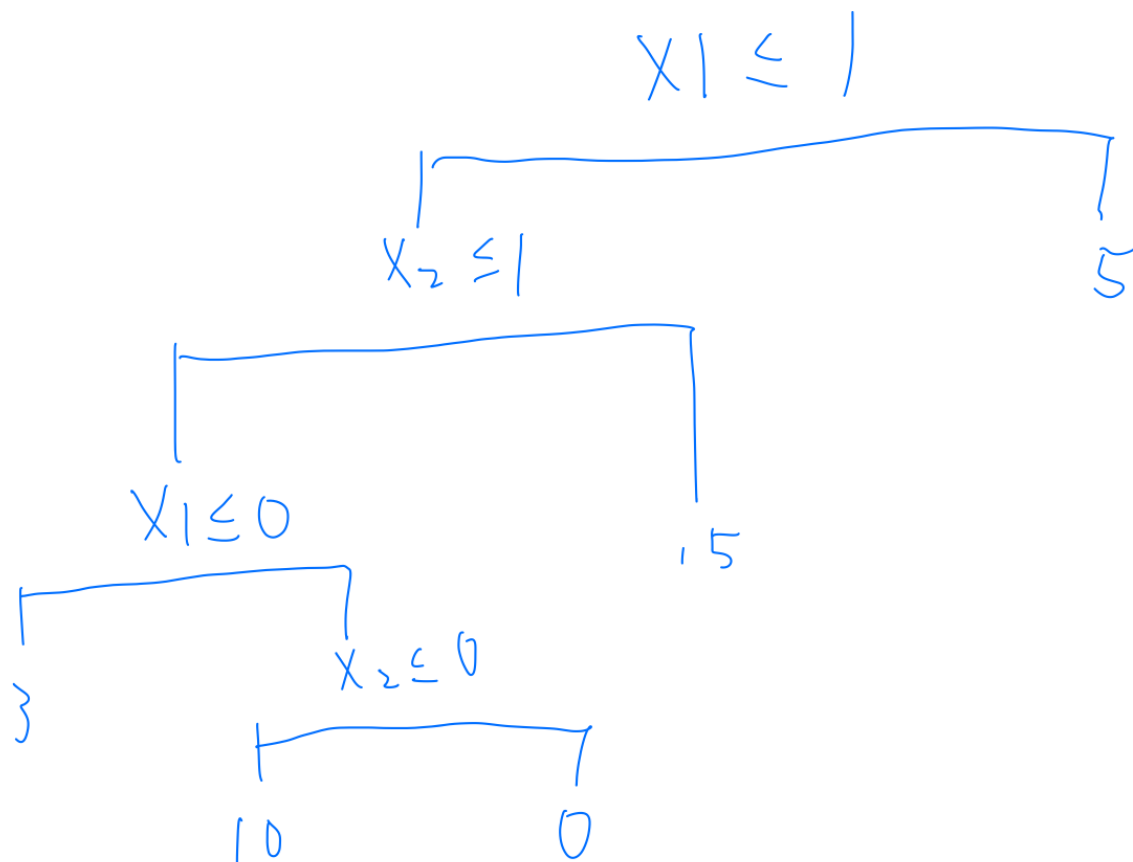


Quantitative Analysis HW10

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1.



2.

(a)

$$T_1 : 300 * 1/3 * 3 = 300$$

$$T_2 : 100 * 0/100 + 400 * 150/400 + 400 * 200/400 = 350$$

We will chose T_1 according to misclassification error rate.

(b)

$$T_1 : 3 * 300 * (\frac{2}{3} \cdot \frac{1}{3} + \frac{1}{6} \cdot \frac{5}{6} + \frac{1}{6} \cdot \frac{5}{6}) = 450$$

$$T_2 : 100 \times 0 + 400 \times (\frac{1}{8} \cdot \frac{7}{8} + \frac{5}{8} \cdot \frac{3}{8} + \frac{1}{4} \cdot \frac{3}{4}) + 400 \times (\frac{3}{8} \cdot \frac{5}{8} + \frac{1}{8} \cdot \frac{7}{8} + \frac{1}{2} \cdot \frac{1}{2}) = 450$$

T_1 and T_2 are equally preferable according to Gini index.

(c)

3/5. Since obs.4 and obs.5 are wrongly classified.

3.

	$\hat{f}_0(x)$	r_0	$\hat{\varphi}_1(x)$	$\hat{f}_1(x)$	r_1	$\hat{\varphi}_2(x)$	$\hat{f}_2(x)$
obs.1	0	6	9	5.4	0.6	$0.35a-0.3$	$5.22a + 0.21$
obs.2	0	9	9	5.4	3.6	$\frac{13}{3} - 0.1a$	$8 - 0.06a$
obs.3	0	12	9	5.4	6.6	$\frac{13}{3} - 0.1a$	$8 - 0.06a$
obs.4	0	4	$2+0.5a$	$1.2+0.3a$	$2.8-0.3a$	$\frac{13}{3} - 0.1a$	$3.8 + 0.24a$
obs.5	0	a	$2+0.5a$	$1.2+0.3a$	$0.7a-1.2$	$0.35a - 0.3$	$1.02 + 0.51a$