Homework submission policy: same as in previous weeks

Problems from Chapter 4:

1. Ex. 4.35 (g). p. 28

2. Ex. 4.43, p. 30, just the first part, i.e. just show (4-135)

3. Ex. 4.46 (e), p. 31 You may use earlier parts of this problem without deriving them.

4. (From Wozencraft and Jacobs, p. 117) Let $X$ be a binary random variable with $p(0) = .7$ and $p(1) = .3$. Let $Y$ be a ternary random variable with $p_{Y|X}(y|x)$ given by the diagram below.

(a) Find the minimum probability of error decision rule for $X$ based on $Y$ and the resulting error probability.

(b) There are 8 potential decision rules. Assuming $p_{Y|X}(y|x)$ is as given above, but $p(0)$ may vary, plot the error probability of each decision rule versus $p(0)$ on one graph.

(c) Each of the 8 decision rules has a maximum error probability, which occurs for some least favorable a priori probability $p(0)$. The decision rule that has the smallest maximum error probability is called the minimax decision rule. Which of the 8 rules is the minimax?

Problems from Chapter 5

5. Ex. 5.19 (b), (c), (d), p. 12 (You do not have to rederive the optimal rule or its performance if it is already given in the text.)

6. Ex. 5.27, p. 14

7. Ex. 5.30, p. 19

8. Ex. 5.31, p. 19