

Artificial Intelligence (CPS 170) : Homework 4

Due March 30, 2006

Problem 1: Do problem 13.1

Problem 2: Do problem 13.3.

Problem 3: Do problem 13.6.

Problem 4: Do problem 13.10.

Problem 5: Do problem 13.13. (Be sure to justify your answer.)

Problem 6: Do problem 13.16. Note that this is a very tricky problem related to what is sometimes called the Monte Hall problem. (Monte Hall was game show host on a show called, “Let’s make a deal.” That show has some similarities to the more current, “Deal or no deal.”) Hint: One way to answer this question correctly is to create another event D , corresponding to the the guard’s message. Note that $P(A|B) \neq P(A|D)$. Think about about why these are different.

Problem 7: Do problem 14.1 a-d.

Problem 8: Do problem 14.7 a-c (we already established d in class).

Problem 9: a) Compute $P(\text{MaryCalls})$ in the alarm network from Figure 14.2. b) In general, suppose you want to compute an unconditional probability $P(X)$ for some node X using variable elimination. Explain why you don’t need to bother summing over any downstream variables from X .

Problem 10: Do problem 15.2

Problem 11: Do problem 15.4