

Artificial Intelligence (CPS 270) : Homework 2

Due September 28, 2006

1 Basic Probability I

Suppose you have n binary random variables and that all atomic events involving these random variables are equiprobable. Prove that the random variables must be independent.

2 Basic Probability II

Do problem 13.9.

3 Basic Probability III

Do problem 13.10.

4 Basic Probability IV

Do problem 13.15.

5 Decision Theory

Do problem 16.4

6 Decision Theory II

Prove rigorously that the value of information calculation presented in class and in the text will always yield a nonnegative value.

7 Decision Theory III

Do problem 16.11

8 MDPs I

Do problem 17.4

9 MDPs II

In the game show example from class, we computed the value of the policy that pays \$1000 to play again at every opportunity. Provide a mathematical justification for the optimality of this policy.

10 MDPs III

What is the largest fee to play again that would still result in the same optimal policy? Justify your answer.