

Hint for Problem 5 – Poker and Game Theory

It helps to read this problem over more than once, so you have a feel for what is going on. After you have a feel for what is going on, it is helpful to list the possible outcomes and probabilities in a table, such as this:

	Probability	Double	Accept	Payoff to A	Payoff to B
B = 4	3/5	N	-	1	-1
		Y	Y	2	-2
		Y	N	-1	1
B = 6	2/5	N	-	-1	1
		Y	Y	-2	2
		Y	N	-1	1

Now when you go to answer the questions, you can refer to the above table.

For instance, in part a), we assume that player B never doubles when receiving a 4. So, if B doubles, this means B has a 6. We want to know what is the payoff to player A if A accepts a double. You should just be able to read this off the table, under the entry 'B=6, A accepts, payoff to A'. You can find the payoff when A rejects a double similarly.

For the expected payoff of the game to player A, we assume that A chooses the better of the two strategies (accepting all doubles or rejecting all doubles). The expected payoff is then

$$(\text{prob. B gets 4})(\text{exp. payoff to A if B gets 4}) + (\text{prob. B gets 6})(\text{exp. payoff to A if B gets 6})$$

under the strategy A has chosen.

Parts b) and c) are similar, only you may have to consider slightly more cases.