Hints and Amendments for Philosophy 148, Assignment #5

1 Problem 1

As this problem is written on the page, it asks you to check whether various pieces of evidence Hempel-confirm various hypotheses. However, when a piece of evidence *doesn't* Hempel-confirm a hypothesis, this is a tricky thing to prove, because it requires showing something very strong. So we are making the problem easier: Everywhere the problem asks you to prove a result about Hempel-confirmation, all you have to do is prove that result for *direct*-Hempel-confirmation. This should be relatively straightforward to do. [The full problems will be offered as extra-credit on the final extra-credit assignment.]

2 Problem 2

Here are some suggestions:

- I found it easier to do an axiomatic proof than an algebraic one for this exercise. But if you can do it algebraically, more power to you!
- If proceeding axiomatically, feel free to use any result we have proved in previous homeworks or lectures (or that you can find in online texts for the course). Make sure at each step of your proof you explain the justification (use of theorem, invocation of premise, etc.) for that step.
- *Use* the fact that $H \,\&\, Ra \vDash Ba$. In particular, what does this mean about $Pr(Ra \,\&\, {\sim}Ba \,\&\, H)$?
- Premise (ii) tells you that Ra is independent of H. This allows you to write down many other statements about conditional probabilities involving Ra, H, and their negations, some of which may be helpful in your proof. Look back at the early lectures for some hints. Similarly, premise (iii) tells you that Ba is independent of H, which has similar useful consequences.
- I found it easiest to do this proof by first proving some preliminary results. I then combined the preliminary results, employed some probability theorems, and did some algebra to prove the formula we want, (iv). Here are the preliminary results I found useful:

  1. $Pr({\sim}Ra \,\&\, {\sim}Ba) > Pr(Ra \,\&\, Ba)$, from premise (i).
  2. $Pr(Ra \,\&\, Ba \,\&\, H) = Pr(H) \cdot Pr(Ra)$, from premise (ii).
  3. $Pr({\sim}Ra \,\&\, {\sim}Ba \,\&\, H) = Pr(H) \cdot Pr({\sim}Ba)$, from premise (iii).

  The proofs of some of these preliminary results also used the fact that $H \,\&\, Ra \vDash Ba$. In the process of combining these preliminary results to get (iv), you will have to use premise 0.