Assignment 2.

1. There are three suspects for a murder: Adams, Brown, and Clark. Adams says: “I didn’t do it. The victim was an old acquaintance of Brown’s. But Clark hated him.” Brown states ”I didn’t do it. I didn’t even know the guy. Besides I was out of town all that week.” Clark says “I didn’t do it. I saw bot Adams and Brown downtown with the victim that day; one of them must have done it.” Assume that the two innocent men are telling the truth, but that the guilty man might not be. Who did it?

2. Do exercises 2 ; 7 ; 9 in pages 14–15 of Van Dalen’s notes

3. Do exercise 1 (a,f,h) in page 20 of Van Dalen’s notes

4. Do exercise 2 in page 21 of Van Dalen’s notes

5. Do exercise 1 (the first and fifth one) in page 27 of Van Dalen’s notes

6. Do exercise 9 in page 28 of Van Dalen’s notes

7. Do exercise 11 in page 29 of Van Dalen’s notes

8. Find a counterexample for the following: For every set of formulas Γ, every formula φ, and every formula ψ, if Γ |= φ ∨ ψ, then Γ |= φ or Γ |= ψ.

9. Each of the following formulae is satisfiable but not valid. Exhibit an interpretation that makes the formula true and another interpretation that makes the formula false.

\[ P \rightarrow Q \quad P \lor Q \rightarrow P \land Q \]
\[ \neg (P \lor Q \lor R) \quad \neg (P \land Q) \land \neg (Q \lor R) \land (P \lor R) \]