In addition to the below given problems, kindly study Chapter 10 and 11 in the lecture notes. Referenced problems can also be found there. In the lecture only marked problems will be discussed; for solutions to the other problems please contact Georg Moser.

1. Problem 11.1.

Hint: Measure the size of an equality problem as the number of symbols in it.

- Let C', C, D', D be clauses such that C' subsumes C and D' subsumes D. Show that if E is a resolvent of C and D, then one of the following cases happens: (i) C' subsumes E, (ii) D' subsumes E, or (iii) there exists a resolvent E' of C' and D' such that E' subsumes E.
- 3. Problem 11.2.
- 4. Problem 11.4.
- 5. Implement a first-order resolution prover (in whatever language you see fit). The prover should already incorporate simple forms of redundancy checks, like tautology elimination and (forward) subsumption.

Hint: As examples consider the prototype implementations available from the homepage.

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