The exercises consist of exercise for *Computational Logic* (*CL* for short) and *Automated Theorem Proving* (*ATP* for short). The exercises for *CL* can be found in Fitting's book. The exercises for *ATP* can be found in the lecture notes. Only marked exercises will be discussed.

- 5.9.3   (*CL*)

- Give free-variable tableau proofs of the following formulas: (*ATP*)
    1. $\exists x \forall y R(x, y) \rightarrow \forall y \exists x R(x, y)$
    2. $\exists x (P(x) \rightarrow \forall x P(x))$.
    3. $\forall x \forall y (P(x) \wedge P(y)) \rightarrow \exists x \exists y (P(x) \vee P(y))$.
    4. $\forall x \forall y (P(x) \wedge P(y)) \rightarrow \forall x \forall y (P(x) \vee P(y))$.
    5. $\forall x \exists y \forall z \exists w (R(x, y) \vee \neg R(w, z))$.

- Problem 10.11   (*ATP*)