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Tutorials for "Automated Reasoning II"
Exercise sheet 6

Exercise 6.1:
Prove that the Equality Factoring rule (page 45 of the script) is sound.

Exercise 6.2:
Prove that the multiset extension of a reduction ordering is stable under substitutions (which implies that the literal ordering defined on page 46 of the script is stable under substitutions). Note: there are several ways to characterize a multiset ordering, see e.g. Baader and Nipkow. You may pick the most convenient one for this purpose.

Exercise 6.3:
Refute the following set of equational clauses by superposition:

$$\begin{aligned} f(x) \not\approx a \ \lor \ f(x) \approx b \quad &(1) \\ f(f(x)) \approx x \quad &(2) \\ a \not\approx b \quad &(3) \end{aligned}$$

Choose an appropriate ordering and perform only inferences that satisfy the ordering restrictions.

Bring your solution (or solution attempt) to the tutorial on Jan. 9.