max planck institut
informatik

Universität
des
Saarlandes
FR Informatik

Uwe Waldmann **December 15, 2011**

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:

$$f(x) \not\approx a \lor f(x) \approx b \quad (1)$$
$$f(f(x)) \approx x \quad (2)$$
$$a \not\approx b \quad (3)$$

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.