Theory of Hybrid Systems Informatik 2
RWTH AACHEN UNIVERSITY

Satisfiability Checking - WS 2016/2017

Series 9

gereon.kremer@cs.rwth-aachen.de
https://ths.rwth-aachen.de/teaching/

Exercise 1

Consider the first-order logical formula over the integers with addition:

$$\varphi^{LIA} \quad := \quad 2 \cdot x_1 \geq 1 \wedge 2 \cdot x_2 \geq 1 \wedge -2 \cdot x_1 - x_2 \geq -3$$

Show how a theory solver that employs a Simplex algorithm with branch and bound solves this formula.

For pivoting, choose the smallest variable and branch on the smallest variable x_k according to the following variable order:

$$s_1 < \cdots < s_7 < x_1 < x_2$$

Branch for $x_k \leq i$ first and for $x_k \geq i + 1$ afterwards.