



max planck institut
informatik

Universität
des
Saarlandes
FR Informatik



Christoph Weidenbach

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**Tutorials for “Automated Reasoning II”
Exercise sheet 3**

Exercise 3.1: (P)

Eliminate x_2 in

$$\exists x_1, x_2, x_3 (3x_1 + 4x_2 - 1 > 0 \wedge -x_1 + x_2 + 1 \geq 0 \wedge 2x_2 - x_3 \approx 0)$$

by virtual substitution.

Exercise 3.2: (P)

Eliminate x_1, x_2, x_3 in

$$\exists x_1, x_2, x_3 (-x_1 + x_2 + 1 \geq 0 \wedge -x_2 - x_3 \geq 0 \wedge x_1 + x_3 - 2 \geq 0)$$

by virtual substitution.

Exercise 3.3: (P)

Eliminate all variables in

$$\exists x. \forall y. (x + 3y < 7 \vee 3x + 3y \geq 7)$$

by virtual substitution.