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Tutorials for “Automated Reasoning II”
Exercise sheet 5

Exercise 5.1: (*P*)

Consider the below set of inequations and apply the simplex algorithm to it:

$$\begin{aligned}x &\geq 0 \\x + y &\geq 1 \\x + 2y &\leq -1 \\x - y &\geq 0\end{aligned}$$

Exercise 5.2: (*P*)

Consider the below set of inequations and apply the simplex algorithm to it:

$$\begin{aligned}2x + 5y &\leq -17 \\3x + 7y &\leq -24 \\2x + 5y &\geq -17 \\3x + 7y &\geq -24\end{aligned}$$

Exercise 5.3: (*P*)

Provide an example where the simplex algorithm does not terminate, if FailBounds is not preferred over EstablishBounds.

Exercise 5.4: (*P*)

Prove that for an equational system E , dependant variable x , independent variable y in E : E is satisfiable iff $\text{piv}(E, x, y)$ is satisfiable.