Theorem Proving and Equality

Exercise 28 *Prove that the inference rules of $\mathcal{G}$ are refutation sound.*

Exercise 29 *Prove that $\succ_c$ defined in the lecture is a total, reduction order on ground clauses.*

For the property of monotonicity use the following definition: $e_1 \succ_e e_2$ implies $C[e_1]_p \succ_c C[e_2]_p$.

Exercise 30 *Finish the example from the lecture:*

Let precedence be defined:

$f \succ a \succ a \succ b \succ c \succ d$.

Let $S = \{\rightarrow c \approx d, f(d) \approx d \rightarrow a \approx b, \rightarrow f(c) \approx d\}$.

Using lpo as $\succ$ (the order on ground terms), saturate S with $\mathcal{G}$ and construct R_S.