Theorem Proving and Equality

Exercise 25 *Let N be a set of clauses, such that for each clause C, $C \in N$, there is at least one positive maximal literal in C.*

Is N satisfiable?

Exercise 26 *Prove refutation soundness and completeness of the inference system based on Ordered Hyperresolution and Ordered Positive Factoring.*

Hint: for completeness use the same construction as in Definition 7, but change the argument about reducing the minimal counterexample.

Exercise 27 *Let A_1, A_2, A_3, A_4 be gound literals such that* $A_1 \prec A_2 \prec A_3 \prec A_4$.

Use ordered hyperresolution to prove that $(A_1 \vee A_4) \wedge (\neg A_4 \vee \neg A_3 \vee A_1) \wedge (A_1 \vee A_2)$ *implies* A_1.

You can do it by hand or use Otter.