

## Exercise 5

**Task 1.** Show that ACYCLIC (Exercise 4) is **NL**-complete.

**Task 2.** Let 2-CNF denote the set of CNF-formulas with exactly two literals in each clause. Furthermore, let 2-SAT denote the set of satisfiable formulas from 2-CNF. Show that 2-SAT  $\in$  **NL**.

**Task 3.** Let TAUTOLOGY denote the set of propositional formulas that evaluate to **true** for all possible assignments of truth values to the variables. Show that TAUTOLOGY is **coNP**-complete.