

Exercise 8

Task 1

Check whether $(\mathbb{N}, \leq) \models \exists x \forall y (x \leq y)$ holds by applying the technique from the proof of the Theorem of Khoussainov and Nerode.

Task 2

Prove or disprove the following statement: If (\mathbb{N}, R_1) and (\mathbb{N}, R_2) are automatically presentable, then (\mathbb{N}, R_1, R_2) is automatically presentable.

Task 3

Tarski's Theorem states that $\text{Th}(\mathbb{R}, +, \cdot)$ is decidable. Show that $\text{Th}(\mathbb{C}, +, \cdot)$ is decidable as well.