universität innsbruck

Computability Theory | WS 2023 | LVA 703317

Week 10 | December 11, 2023

Exercises

⟨1⟩ 1. Compute $\mathfrak{g}(\mathsf{B})$.

⟨1⟩ 2. Define a predicate $\mathsf{nf} : \mathbb{N} \to \mathbb{B}$ such that $\mathsf{nf}(x)$ is true if and only if $x = \mathfrak{g}(t)$ with t in normal form.

⟨2⟩ 3. (a) Prove that the relation $\leftrightarrow^*$ on CL-terms is not decidable.

(b) What about $\rightarrow^*$?

⟨1⟩ 4. Prove that B is typable.

⟨2⟩ 5. The *range* of a combinator F is the set of all combinators Y such that $Y \leftrightarrow^* F\,X$ for some combinator X. Prove that the range of any combinator contains either one or infinitely many equivalence classes with respect to $\leftrightarrow^*$.