universität innsbruck

Computability Theory	26W	LVA 703317
Lecture 7		December 7, 2026

Solved exercises must be marked and solutions (as a single PDF file) uploaded in OLAT. The (strict) deadline is 10 am on December 7.

Exercises

⟨1⟩ 1. Reduce the following combinators to normal form.
   (a) SSSS
   (b) SSSSS
   (c) SS(SS)(SS)

⟨2⟩ 2. (a) Compute $\langle x\,y\,z\rangle(x(yz))$.
   (b) Compute $\langle x_1 \ldots x_n\rangle x_i$ for all $1 \leqslant i \leqslant n$.

⟨1⟩ 3. Prove the lemma on slide 21.

⟨2⟩ 4. Construct a combinator add such that $\mathsf{add}\,\underline{m}\,\underline{n} \to^* \underline{m+n}$ for all $m, n \geqslant 0$.

⟨3⟩ 5. Prove the lemma on slide 25.