universität innsbruck

Computability Theory | WS 2023 | LVA 703317

Week 12 | January 15, 2024

Exercises

1. Which of the following types is inhabited? Provide an appropriate combinator or explain why no combinator of the given type exists.

⟨1⟩ (a) $(\alpha \to \beta) \to \alpha$

⟨1⟩ (b) $(\alpha \to \alpha \to \beta) \to \alpha \to \beta$

2. For each of the following propositional formulas φ, construct a Kripke model $\mathcal{C}_\varphi$ such that $\mathcal{C}_\varphi \nVdash \varphi$.

⟨1⟩ (a) $\neg\neg p \to p$

⟨1⟩ (b) $(p \to q \vee r) \to (p \to q) \vee (p \to r)$

3. Which of the following propositional formulas are intuitionistically valid? For those that are, provide a proof in the Hilbert system on slide 26. For those that are not, construct a Kripke model that shows this.

⟨1⟩ (a) $\varphi \to \neg\neg\varphi$

⟨1⟩ (b) $\neg(\varphi \wedge \psi) \to (\neg\varphi \vee \neg\psi)$

⟨1⟩ (c) $(\varphi \to \psi) \to (\neg\varphi \vee \psi)$