

# Logic and Computation I, Autumn 2022

## Homework No.4

Due Date: November 21, 11:59 pm (Beijing)

Name:

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### Problem 1

Prove that there exist two disjoint CE sets  $A, B \subset \mathbb{N}$  such that there is no computable set  $C$  satisfying  $A \subset C$  and  $B \cap C = \emptyset$ .

(Sets  $A$  and  $B$  with the above property are said to be **computably inseparable**.)

### Solution:

### Problem 2 Construct proofs of the following propositions.

(1)  $\neg\varphi \rightarrow (\varphi \rightarrow \psi)$ .

(2)  $\neg\neg\varphi \rightarrow \varphi$ .

### Solution:

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