

Logic and Foundations I, Autumn 2023

Homework No.5

Due: 2023.10.31

Name:

Problem 1

Let $\mathcal{L} = (\langle, f)$. In the structure (\mathbb{R}, \langle, f) of real numbers with ordinary \langle , construct a formula expressing “the function $f(x)$ is continuous at $x = a$ ”.

(Cf. Example 2, p.6 in slides lec02-01. Here, you are not allowed to use operations $+$, \cdot , $-$.)

Solution:

Problem 2

Let (\mathbb{R}, \langle, f) be the same \mathcal{L} -structure as above. Then, show that there is no formula that expresses “ $f(x)$ is differentiable at $x = a$ ”. Solution: