MATHEMATICAL LOGIC HOMEWORK 5

Due Monday, April 1.

Problem 1. *Exercise 6.9 from the lecture notes.*

Problem 2. *Exercise 6.10 from the lecture notes.*

Problem 3. *Exercise 6.13 from the lecture notes.*

Problem 4. *Exercise 10.10 from the lecture notes.*

Let $\phi_{prov-T}(e)$ be the formula in the language of arithmetic which states that e codes a formula ϕ_e and $T \vdash \phi_e$. Also for a formula ϕ, $\ulcorner \phi \urcorner$ denotes the Gödel number of ϕ

Problem 5. *Show that if ϕ is Σ_1 and $\mathfrak{A} = (\mathbb{N}, <, +, \cdot, S, 0, 1)$ is the standard model of arithmetic, then $\mathfrak{A} \models \phi \to \phi_{prov-PA}(\ulcorner \phi \urcorner)$.*