

Homework 10

MATH 461

(due April 19)

April 12, 2024

Problem 1. Prove that a set of Γ WFF is consistent iff every finite subset $\Gamma_0 \subseteq \Gamma$ is consistent.

Problem 2. Using Problem 1, conclude the compactness theorem from the completeness theorem [Hint: Use the equivalent formulation we face in class for the completeness theorem].

Problem 3. (i) Prove by induction on the length of the WFF ϕ that if y does not occur in ϕ , then x is substitutable for y in ϕ_y^x and $(\phi_y^x)_x^y = \phi$.

(ii) Give an example of a WFF ϕ such that $(\phi_y^x)_x^y \neq \phi$.