MATHEMATICAL LOGIC — ASSIGNMENT FOUR

(1) Define the Gödel-Gentzen translation.
(2) Prove that there is a non-standard model for Peano arithmetic.
(3) Let $P = \left\{ \ulcorner \phi \urcorner \colon\ \vdash_{\mathsf{PA}} \phi \text{ and } \mathsf{FV}(\phi) = \emptyset \right\}$. Show that P is not recursive.

Each question is worth 12 points. The points in all the four assignments will be added together and the result will be divided by 4, and this will be the final result. Remember to mark your answer sheet with your name.

Date: June 5th, 2024.