

Assignment 3, Math 3TP3
Due Mar. 11, in class

1. You read but we didn't discuss section 10.5. Theorem 10.8 is quite interesting showing the limitations of the system Q. Smith outlines how one can interpret $+$ in this non-standard interpretation but leaves multiplication as an exercise. Finish his proof.
2. Give a proof of Theorem 11.3 (iii) from the book: the negation of a Π_1 -formula is equivalent to a Σ_1 -formula.
3. Smith makes a remark in a footnote on page 115 that one could have included exponentiation as one of the basic functions in our language L_A . He calls this L_A^+ . What would a theory like Q look like for this language? Write down enough axioms so that you feel you have captured enough of exponentiation for practical purposes.
4. In Theorem 16.1, Smith is a bit vague about the necessary minimal assumptions. What are they?