MATH 571: MATHEMATICAL LOGIC
HOMEWORK SET 12, DUE AT 8:50 ON MONDAY, NOV. 30

BRING YOUR SOLUTIONS TO CLASS, OR SLIDE THEM UNDER THE DOOR OF VAN VLECK 403

1. Exercise 3.1.1 from Enderton.

2. Exercise 3.3.1 from Enderton.

3. Exercise 3.3.2 from Enderton.

4. Let A_S be the set of axioms as discussed in class (they are also on page 188 of Enderton). We have seen that A_S axiomatizes $\mathcal{N}_S$, i.e. $\mathrm{Th}(\mathcal{N}_S) = \mathrm{Cn}(A_S)$. Show that there is no finite subset Γ of A_s such that $\mathrm{Th}(\mathcal{N}_S) = \mathrm{Cn}(\Gamma)$. (Hint: given a finite subset Γ of A_S, let n be largest such that axiom $S4.n$ is in Γ. Now build a model of Γ in which the axiom $S4.n + 1$ is false.)