# MATH 571: MATHEMATICAL LOGIC
## HOMEWORK SET 1, DUE AT 8:50 ON FRIDAY, SEPT. 11

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

1. Translate the following English sentences into wffs, following the convention that you should only use sentence symbols for the basic parts of the statements. Reuse the same sentence symbol for the same basic parts in different sentences.

   (a) No kitten, that loves fish, is unteachable;
   (b) No kitten without a tail will play with a gorilla;
   (c) Kittens with whiskers always love fish;
   (d) No teachable kitten has green eyes;
   (e) No kittens have tails unless they have whiskers.

2. Give an ancestral tree and a construction sequence for the following formula:
$$(((A_1 \lor A_5) \land (A_5 \to A_{21})) \lor (\neg(A_1 \lor A_2))).$$

3. Exercise 1.1.2 from Enderton (hint: use the induction principle to show that there are no wffs of length 2, 3 or 6, and give an explicit example of wffs of other lengths).

4. Exercise 1.1.4 from Enderton.

5. Exercise 1.1.5 from Enderton (use the suggestion!).