

Malliteoria
Harjoitus 4

1. Where in the proof of Theorem 5.13 the atomic formula \top was needed?
2. Let $L = \{E\}$, $\#E = 2$, and T_g consist of the following two sentences:

$$\forall v_0 \neg E(v_0, v_0)$$

$$\forall v_0 \forall v_1 (E(v_0, v_1) \rightarrow E(v_1, v_0)).$$

Show that T has AP, JEP and is closed under unions.

3. Let L and T_g be as above. Find a theory T such that the models of T are exactly the existentially closed models of T_g .
4. Let T be as in Example 5.19. Show that T has AP, JEP and is closed under unions.
5. Let T and ϕ be as in Example 5.19. Show that if \mathcal{A} is an existentially closed model of T and $a \in \mathcal{A}$, then $\mathcal{A} \models \phi(a)$ iff $(c_i^{\mathcal{A}}, a) \in Q^{\mathcal{A}}$ for some $i < \omega$.
6. Let T and ϕ be as in Example 5.19. Show that there is no quantifier free formula $\psi(v_0)$ such that for all existentially closed models \mathcal{A} of T , $\mathcal{A} \models \forall v_0 (\phi \leftrightarrow \psi)$.