

ALG 08

297) $t(x_1, \dots, x_n), t'(x_1, \dots, x_n)$ Terme in fester Sprache L
 V ... Varietät zu Sprache L $F \in V$... frei über $\{b_1, \dots, b_n\}$ in V

\Rightarrow (a) $\Delta \models F$ gilt $t(b_1, \dots, b_n) = t'(b_1, \dots, b_n)$

(b) $\forall C \in V: C \models t \approx t'$

(c) $F \models t \approx t'$

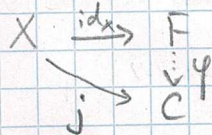
zz: (a) \Leftrightarrow (b) \Leftrightarrow (c)

(b) \Rightarrow (c) klar, da $F \in V$

(c) \Rightarrow (a) $F \models t \approx t' \Rightarrow \forall f_1, \dots, f_n \in F: t(f_1, \dots, f_n) = t'(f_1, \dots, f_n)$

Da $\{b_1, \dots, b_n\} \subseteq F \Rightarrow t(b_1, \dots, b_n) = t'(b_1, \dots, b_n)$

(a) \Rightarrow (b) Sei $C \in V$ bel.



Sei $c_1, \dots, c_n \in C$ bel.

$j: X \rightarrow C, b_i \mapsto c_i, \forall i \in \{1, \dots, n\} \Rightarrow \exists \varphi: F \rightarrow C \text{ Hom. } j \leq \varphi \circ id_X = \varphi$

$t(c_1, \dots, c_n) = t(j(b_1), \dots, j(b_n)) = t(\varphi(b_1), \dots, \varphi(b_n)) \stackrel{*}{=} \varphi(t(b_1, \dots, b_n)) = \dots$

* folgt aus Prop. 2.3.3.2.1

$\dots = \varphi(t'(b_1, \dots, b_n)) \stackrel{*}{=} t'(\varphi(b_1), \dots, \varphi(b_n)) = t'(c_1, \dots, c_n)$

$\Rightarrow C \models t \approx t'$

□