

t6\_topgen\_5  
(TMHMrB6skttRRoMgSfMZeXmAmsQ6yjftLgR)

October 27, 2020

Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_funct\_6 : \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_funct\_5 : \iota \Rightarrow \iota$  be given. Let  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_funcop\_1 : \iota \Rightarrow o$  be given. Let  $k2\_funct\_5 : \iota \Rightarrow \iota$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1\_relat\_1 X2) \wedge (v1\_funct\_1 \\ & X2)) \Rightarrow (\forall X3. ((v1\_relat\_1 X3) \wedge (v1\_funct\_1 X3)) \Rightarrow (((k4\_tarski \\ & X0 X1 \in k9\_xtuple\_0 X2) \wedge (X3 = k1\_funct\_1 (k3\_funct\_5 X2) X1)) \Rightarrow (( \\ & X0 \in k9\_xtuple\_0 X3) \wedge (k1\_funct\_1 X3 X0 = k1\_binop\_1 X2 X0 X1)))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. k2\_xtuple\_0 (k4\_tarski X0 X1) = X1 \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. k1\_xtuple\_0 (k4\_tarski X0 X1) = X0 \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_funcop\_1 \\ & X0))) \Rightarrow ((v1\_relat\_1 (k1\_funct\_1 X0 X1)) \wedge (v1\_funct\_1 (k1\_funct\_1 \\ & X0 X1))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0. ((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow ((v1\_relat\_1 (k2\_funct\_5 X0)) \wedge (v1\_funct\_1 (k2\_funct\_5 X0))) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow ((v1\_relat\_1 ( \\ & k10\_funct\_6 X0)) \wedge ((v1\_funct\_1 (k10\_funct\_6 X0)) \wedge (v1\_funcop\_1 \\ & (k10\_funct\_6 X0)))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.k4\_tarski\ X0\ X1 = k2\_tarski\ (k2\_tarski\ X0\ X1)\ (k1\_tarski\ X0) \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1\_relat\_1\ X0)\wedge(v1\_funct\_1\ X0))\Rightarrow(\forall X1.(( \\ & v1\_relat\_1\ X1)\wedge(v1\_funct\_1\ X1))\Rightarrow((X1 = k2\_funct\_5\ X0)\Leftrightarrow((\forall X2. \\ & (X2 \in k9\_xtuple\_0\ X1)\Leftrightarrow(\exists X3.\exists X4.((v1\_relat\_1\ X4)\wedge \\ & (v1\_funct\_1\ X4))\wedge(\exists X5.(X2 = k4\_tarski\ X3\ X5)\wedge((X3 \in k9\_xtuple\_0 \\ & X0)\wedge((X4 = k1\_funct\_1\ X0\ X3)\wedge(X5 \in k9\_xtuple\_0\ X4))))))\wedge(\forall X2. \\ & \forall X3.((v1\_relat\_1\ X3)\wedge(v1\_funct\_1\ X3))\Rightarrow(((X2 \in k9\_xtuple\_0 \\ & X1)\wedge(X3 = k1\_funct\_1\ X0\ (k1\_xtuple\_0\ X2)))\Rightarrow(k1\_funct\_1\ X1\ X2 = k1\_funct\_1 \\ & X3\ (k2\_xtuple\_0\ X2)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.((v1\_relat\_1\ X0)\wedge(v1\_funct\_1\ X0))\Rightarrow(\forall X1.\forall X2. \quad (9) \\ k1\_binop\_1\ X0\ X1\ X2 = k1\_funct\_1\ X0\ (k4\_tarski\ X1\ X2))$$

Assume the following.

$$\forall X0.((v1\_relat\_1\ X0)\wedge(v1\_funct\_1\ X0))\Rightarrow(k10\_funct\_6\ X0 = \quad (10) \\ k3\_funct\_5\ (k2\_funct\_5\ X0))$$

Assume the following.

$$\forall X0.\forall X1.k2\_tarski\ X0\ X1 = k2\_tarski\ X1\ X0 \quad (11)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v1\_relat\_1\ X2)\wedge(v1\_funct\_1 \\ & X2))\Rightarrow(\forall X3.((v1\_relat\_1\ X3)\wedge(v1\_funct\_1\ X3))\Rightarrow(((X0 \in k9\_xtuple\_0 \\ & X2)\wedge((X3 = k1\_funct\_1\ X2\ X0)\wedge(X1 \in k9\_xtuple\_0\ X3)))\Rightarrow(k1\_funct\_1 \\ & (k1\_funct\_1\ (k10\_funct\_6\ X2)\ X1)\ X0 = k1\_funct\_1\ X3\ X1))) \end{aligned}$$