

t54_funct_4
(TMMaBXe7zUJcvUGPffHNrVvGXK8pPXyfs5X)

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Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k3_funct_4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\ & \forall X6. \forall X7. (k4_tarski (k4_tarski X0 X1) (k4_tarski \\ & X2 X3) = k4_tarski (k4_tarski X4 X5) (k4_tarski X6 X7)) \Rightarrow ((X0 = X4) \wedge \\ & ((X2 = X6) \wedge ((X1 = X5) \wedge (X3 = X7)))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \wedge ((\\ & v1_relat_1 X1) \wedge (v1_funct_1 X1))) \Rightarrow ((v1_relat_1 (k3_funct_4 X0 \\ & X1)) \wedge (v1_funct_1 (k3_funct_4 X0 X1))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1. ((\\ & v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow (\forall X2. ((v1_relat_1 X2) \wedge \\ & (v1_funct_1 X2)) \Rightarrow ((X2 = k3_funct_4 X0 X1) \Leftrightarrow ((\forall X3. (X3 \in k9_xtuple_0 \\ & X2) \Leftrightarrow (\exists X4. \exists X5. \exists X6. \exists X7. (X3 = k4_tarski \\ & (k4_tarski X4 X6) (k4_tarski X5 X7)) \wedge ((k4_tarski X4 X5 \in k9_xtuple_0 \\ & X0) \wedge (k4_tarski X6 X7 \in k9_xtuple_0 X1)))))) \wedge (\forall X3. \forall X4. \\ & \forall X5. \forall X6. ((k4_tarski X3 X4 \in k9_xtuple_0 X0) \wedge (k4_tarski \\ & X5 X6 \in k9_xtuple_0 X1)) \Rightarrow (k1_binop_1 X2 (k4_tarski X3 X5) (k4_tarski \\ & X4 X6) = k4_tarski (k1_binop_1 X0 X3 X4) (k1_binop_1 X1 X5 X6)))))) \end{aligned} \quad (3)$$

Theorem 1

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. ((v1_relat_1 \\ & X4) \wedge (v1_funct_1 X4)) \Rightarrow (\forall X5. ((v1_relat_1 X5) \wedge (v1_funct_1 \\ & X5)) \Rightarrow ((k4_tarski (k4_tarski X0 X1) (k4_tarski X2 X3) \in k9_xtuple_0 \\ & (k3_funct_4 X4 X5)) \Leftrightarrow ((k4_tarski X0 X2 \in k9_xtuple_0 X4) \wedge (k4_tarski \\ & X1 X3 \in k9_xtuple_0 X5)))) \end{aligned}$$