

t12_extpro_1
(TMbW2oHBqq9GQ1XdpcsaPN4ZnkG9um2N3km)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_setfam_1 : \iota \Rightarrow o$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_memstr_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v3_memstr_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v3_extpro_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_extpro_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $k5_numbers : \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_compos_1 : \iota \Rightarrow \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k16_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_compos_1 : \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $v5_funct_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_memstr_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v5_memstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_extpro_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_extpro_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow ((r1_tarski X0 X1) \Rightarrow (k5_relat_1 X1 (k9_xtuple_0 X0) = X0))) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((r1_tarski X0 X1) \wedge (r1_tarski X1 X2)) \Rightarrow (r1_tarski X0 X2) \quad (2)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1_xboole_0 X0) \wedge (\neg v1_setfam_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge ((v2_memstr_0 X1 X0) \wedge ((v3_memstr_0 X1 X0) \wedge \\
& ((v3_extpro_1 X1 X0) \wedge (l1_extpro_1 X1 X0)))))) \Rightarrow (\forall X2.(m2_subset_1 \\
& X2 k1_numbers k5_numbers) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge ((v4_relat_1 \\
& X3 k5_numbers) \wedge ((v5_relat_1 X3 (u1_compos_1 X1)) \wedge (v1_funct_1 \\
& X3)))))) \Rightarrow ((r1_tarski (k16_funcop_1 X2 (k2_compos_1 X1)) X3) \Rightarrow (\forall X4. \\
& ((v1_relat_1 X4) \wedge ((v4_relat_1 X4 (u1_struct_0 X1)) \wedge ((v1_funct_1 \\
& X4) \wedge ((v5_funct_1 X4 (k2_memstr_0 X0 X1)) \wedge (v5_memstr_0 X4 X0 X1 \\
& X2)))))) \Rightarrow (\forall X5.((v1_relat_1 X5) \wedge ((v4_relat_1 X5 (u1_struct_0 \\
& X1)) \wedge ((v1_funct_1 X5) \wedge ((v5_funct_1 X5 (k2_memstr_0 X0 X1)) \wedge (\\
& v1_partfun1 X5 (u1_struct_0 X1)))))) \Rightarrow ((r1_tarski X4 X5) \Rightarrow (\forall X6. \\
& (m2_subset_1 X6 k1_numbers k5_numbers) \Rightarrow (k5_extpro_1 X0 X1 X3 X5 \\
& X6 = X5)))))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1_xboole_0 X0) \wedge (\neg v1_setfam_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge ((v2_memstr_0 X1 X0) \wedge ((v3_memstr_0 X1 X0) \wedge \\
& (l1_extpro_1 X1 X0)))))) \Rightarrow (\forall X2.((v1_relat_1 X2) \wedge ((v4_relat_1 \\
& X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 X1)) \wedge (v1_funct_1 \\
& X2)))))) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge ((v4_relat_1 X3 (u1_struct_0 \\
& X1)) \wedge ((v1_funct_1 X3) \wedge (v5_funct_1 X3 (k2_memstr_0 X0 X1)))))) \Rightarrow \\
& ((v4_extpro_1 X3 X0 X1 X2) \Leftrightarrow (\forall X4.((v1_relat_1 X4) \wedge ((v4_relat_1 \\
& X4 k5_numbers) \wedge ((v5_relat_1 X4 (u1_compos_1 X1)) \wedge ((v1_funct_1 \\
& X4) \wedge (v1_partfun1 X4 k5_numbers)))))) \Rightarrow (\forall X5.((v1_relat_1 \\
& X5) \wedge ((v4_relat_1 X5 k5_numbers) \wedge ((v5_relat_1 X5 (u1_compos_1 \\
& X1)) \wedge ((v1_funct_1 X5) \wedge (v1_partfun1 X5 k5_numbers)))))) \Rightarrow (((r1_tarski \\
& X2 X4) \wedge (r1_tarski X2 X5)) \Rightarrow (\forall X6.((v1_relat_1 X6) \wedge ((v4_relat_1 \\
& X6 (u1_struct_0 X1)) \wedge ((v1_funct_1 X6) \wedge ((v5_funct_1 X6 (k2_memstr_0 \\
& X0 X1)) \wedge (v1_partfun1 X6 (u1_struct_0 X1)))))) \Rightarrow (\forall X7.((\\
& v1_relat_1 X7) \wedge ((v4_relat_1 X7 (u1_struct_0 X1)) \wedge ((v1_funct_1 \\
& X7) \wedge ((v5_funct_1 X7 (k2_memstr_0 X0 X1)) \wedge (v1_partfun1 X7 (u1_struct_0 \\
& X1)))))) \Rightarrow (((r1_tarski X3 X6) \wedge (r1_tarski X3 X7)) \Rightarrow (\forall X8. \\
& (m2_subset_1 X8 k1_numbers k5_numbers) \Rightarrow (k5_relat_1 (k5_extpro_1 \\
& X0 X1 X4 X6 X8) (k9_xtuple_0 X3) = k5_relat_1 (k5_extpro_1 X0 X1 X5 \\
& X7 X8) (k9_xtuple_0 X3)))))))))
\end{aligned} \tag{4}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (\neg v1_setfam_1 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2_struct_0 X1) \wedge ((v2_memstr_0 X1 X0) \wedge ((v3_memstr_0 X1 X0) \wedge \\ & ((v3_extpro_1 X1 X0) \wedge (l1_extpro_1 X1 X0)))))) \Rightarrow (\forall X2.(m2_subset_1 \\ & X2 k1_numbers k5_numbers) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge ((v4_relat_1 \\ & X3 k5_numbers) \wedge ((v5_relat_1 X3 (u1_compos_1 X1)) \wedge (v1_funct_1 \\ & X3)))))) \Rightarrow ((r1_tarski (k16_funcop_1 X2 (k2_compos_1 X1)) X3) \Rightarrow (\forall X4. \\ & ((v1_relat_1 X4) \wedge ((v4_relat_1 X4 (u1_struct_0 X1)) \wedge ((v1_funct_1 \\ & X4) \wedge ((v5_funct_1 X4 (k2_memstr_0 X0 X1)) \wedge (v5_memstr_0 X4 X0 X1 \\ & X2)))))) \Rightarrow (v4_extpro_1 X4 X0 X1 X3)))))) \end{aligned}$$