

t47_topalg_1
(TMYXvFmSk5ciTLfWRivAzH5cTToydBWFhGK)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_pre_topc : \iota \Rightarrow o$ be given. Let $l1_pre_topc : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k5_topalg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_borsuk_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6_eqrel_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_topalg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_topalg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v3_relat_2 : \iota \Rightarrow o$ be given. Let $v8_relat_2 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_eqrel_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_eqrel_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_topmetr : \iota$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v5_pre_topc : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v15_algstr_0 : \iota \Rightarrow o$ be given. Let $l3_algstr_0 : \iota \Rightarrow o$ be given. Let $k5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2_algstr_0 : \iota \Rightarrow \iota$ be given. Let $k1_borsuk_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_topalg_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. \neg (X0 \in X1) \wedge (v1_xboole_0 X1) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v3_relat_2 X2) \wedge ((v8_relat_2 \\ & X2) \wedge ((v1_partfun1 X2 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X1 X1)))))) \Rightarrow (\neg (X0 \in k7_eqrel_1 X1 X2) \wedge (\forall X3. (m1_subset_1 \\ & X3 X1) \Rightarrow (X0 \neq k6_eqrel_1 X1 X1 X2 X3))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v3_relat_2 X1) \wedge ((v8_relat_2 X1) \wedge ((v1_partfun1 \\ & X1 X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 X0 X0)))))) \Rightarrow \\ & (k8_eqrel_1 X0 X1 = k7_eqrel_1 X0 X1) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v2_pre_topc X0)\wedge \\ & (l1_pre_topc X0)))\wedge(m1_subset_1 X1 (u1_struct_0 X0)))\Rightarrow(\exists X2. \\ & (m1_borsuk_2 X2 X0 X1 X1)\wedge((\neg v1_xboole_0 X2)\wedge((v1_relat_1 X2)\wedge \\ & ((v4_relat_1 X2 (u1_struct_0 k5_topmetr))\wedge((v5_relat_1 X2 (u1_struct_0 \\ & X0))\wedge((v1_funct_1 X2)\wedge((v1_partfun1 X2 (u1_struct_0 k5_topmetr))\wedge \\ & ((v1_funct_2 X2 (u1_struct_0 k5_topmetr) (u1_struct_0 X0))\wedge(\\ & v5_pre_topc X2 k5_topmetr X0)))))))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v2_pre_topc X0)\wedge \\ & (l1_pre_topc X0)))\wedge(m1_subset_1 X1 (u1_struct_0 X0)))\Rightarrow((\neg v1_xboole_0 \\ & (k4_topalg_1 X0 X1))\wedge((v1_partfun1 (k4_topalg_1 X0 X1) (k2_topalg_1 \\ & X0 X1))\wedge((v3_relat_2 (k4_topalg_1 X0 X1))\wedge(v8_relat_2 (k4_topalg_1 \\ & X0 X1)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v3_relat_2 X1)\wedge((v8_relat_2 X1)\wedge((v1_partfun1 \\ & X1 X0)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 X0 X0))))))\Rightarrow \quad (7) \\ & (m1_subset_1 (k7_eqrel_1 X0 X1) (k1_zfmisc_1 (k1_zfmisc_1 X0))) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(m1_subset_1 X2 (\\ & k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))\Rightarrow(m1_subset_1 (k6_eqrel_1 X0 \quad (8) \\ & X1 X2 X3) (k1_zfmisc_1 X1)) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v2_pre_topc X0)\wedge \\ & (l1_pre_topc X0)))\wedge(m1_subset_1 X1 (u1_struct_0 X0)))\Rightarrow((v15_algstr_0 \\ & (k5_topalg_1 X0 X1))\wedge(l3_algstr_0 (k5_topalg_1 X0 X1))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v2_pre_topc X0)\wedge \\ & (l1_pre_topc X0)))\wedge(m1_subset_1 X1 (u1_struct_0 X0)))\Rightarrow(m1_subset_1 \\ & (k4_topalg_1 X0 X1) (k1_zfmisc_1 (k2_zfmisc_1 (k2_topalg_1 X0 \\ & X1) (k2_topalg_1 X0 X1)))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_pre_topc X0) \wedge (l1_pre_topc X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& ((v15_algstr_0 X2) \wedge (l3_algstr_0 X2)) \Rightarrow ((X2 = k5_topalg_1 X0 X1) \Leftrightarrow \\
& ((u1_struct_0 X2 = k8_eqrel_1 (k2_topalg_1 X0 X1) (k4_topalg_1 X0 X1)) \wedge (\forall X3.(m1_subset_1 X3 (u1_struct_0 X2)) \Rightarrow (\forall X4. \\
& (m1_subset_1 X4 (u1_struct_0 X2)) \Rightarrow (\exists X5.(m1_borsuk_2 X5 X0 X1 X1) \wedge (\exists X6.(m1_borsuk_2 X6 X0 X1 X1) \wedge ((X3 = k6_eqrel_1 \\
& (k2_topalg_1 X0 X1) (k2_topalg_1 X0 X1) (k4_topalg_1 X0 X1) X5) \wedge \\
& ((X4 = k6_eqrel_1 (k2_topalg_1 X0 X1) (k2_topalg_1 X0 X1) (k4_topalg_1 X0 X1) X6) \wedge (k5_binop_1 (u1_struct_0 X2) (u2_algstr_0 X2) X3 X4 = \\
& k6_eqrel_1 (k2_topalg_1 X0 X1) (k2_topalg_1 X0 X1) (k4_topalg_1 X0 X1) (k1_borsuk_2 X0 X1 X1 X1 X5 X6))))))))))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v3_relat_2 X1) \wedge ((v8_relat_2 X1) \wedge ((v1_partfun1 X1 X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 X0 X0)))))) \Rightarrow \\
& (\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 (k1_zfmisc_1 X0))) \Rightarrow \\
& ((X2 = k7_eqrel_1 X0 X1) \Leftrightarrow (\forall X3.(m1_subset_1 X3 (k1_zfmisc_1 X0)) \Rightarrow \\
& (X0) \Rightarrow ((X3 \in X2) \Leftrightarrow (\exists X4.(X4 \in X0) \wedge (X3 = k6_eqrel_1 X0 X0 X1 X4))))))
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge (l1_pre_topc X0)) \Rightarrow (\forall X1. \\
& (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (k2_topalg_1 X0 X1 = k1_topalg_1 X0 X1 X1))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge (l1_pre_topc X0)) \Rightarrow (\forall X1. \\
& (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(X3 = k1_topalg_1 X0 X1 X2) \Leftrightarrow (\forall X4. \\
& (X4 \in X3) \Leftrightarrow (m1_borsuk_2 X4 X0 X1 X2))))))
\end{aligned} \tag{14}$$

Theorem 1

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge ((v2_pre_topc X0) \wedge (l1_pre_topc X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (X2 \in u1_struct_0 (k5_topalg_1 X0 X1)) \Leftrightarrow (\exists X3.(m1_borsuk_2 X3 X0 X1 X1) \wedge (X2 = k6_eqrel_1 (k2_topalg_1 X0 X1) (k2_topalg_1 X0 X1) (k4_topalg_1 X0 X1) X3))))
\end{aligned}$$