

t21_tops_1 (TMUGdL- CQhLwZ6bGWJYJUBKn3N1Ds21hBTXA)

October 27, 2020

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 $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_tops_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_pre_topc : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. \forall X2. k4_xboole_0 X0 (k3_xboole_0 X1 X2) = k2_xboole_0 (k4_xboole_0 X0 X1) (k4_xboole_0 X0 X2) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (r1_tarski X0 X1) \Rightarrow (r1_tarski (k3_xboole_0 X0 X2) (k3_xboole_0 X1 X2)) \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. ((v2_pre_topc X0) \wedge (l1_pre_topc X0)) \Rightarrow (\forall X1. \\ (m1_subset_1 X1 (k1_zfmisc_1 (u1_struct_0 X0))) \Rightarrow (\forall X2. \\ (m1_subset_1 X2 (k1_zfmisc_1 (u1_struct_0 X0))) \Rightarrow (k2_pre_topc \\ X0 (k4_subset_1 (u1_struct_0 X0) X1 X2) = k4_subset_1 (u1_struct_0 \\ X0) (k2_pre_topc X0 X1) (k2_pre_topc X0 X2)))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((r1_tarski X0 X1) \wedge (r1_tarski X1 X2)) \Rightarrow (r1_tarski X0 X2) \quad (4)$$

Assume the following.

$$\forall X0. (l1_pre_topc X0) \Rightarrow (\forall X1. (m1_subset_1 X1 (k1_zfmisc_1 (u1_struct_0 X0))) \Rightarrow (r1_tarski X1 (k2_pre_topc X0 X1))) \quad (5)$$

Assume the following.

$$\forall X0.(l1_pre_topc\ X0) \Rightarrow (\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ (u1_struct_0\ X0))) \Rightarrow (r1_tarski\ (k1_tops_1\ X0\ X1\ X1))) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ X0)) \Rightarrow (\forall X2.(m1_subset_1\ X2\ (k1_zfmisc_1\ X0)) \Rightarrow (k7_subset_1\ X0\ X1\ X2 = k9_subset_1\ X0\ X1\ (k3_subset_1\ X0\ X2))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ X0)) \Rightarrow (\forall X2.(m1_subset_1\ X2\ (k1_zfmisc_1\ X0)) \Rightarrow ((r1_tarski\ X1\ X2) \Leftrightarrow (r1_tarski\ (k3_subset_1\ X0\ X2)\ (k3_subset_1\ X0\ X1)))) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1\ X2\ (k1_zfmisc_1\ X0)) \Rightarrow (k9_subset_1\ X0\ X1\ X2 = k3_xboole_0\ X1\ X2) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1\ X1\ (k1_zfmisc_1\ X0)) \Rightarrow (k7_subset_1\ X0\ X1\ X2 = k4_xboole_0\ X1\ X2) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1_subset_1\ X1\ (k1_zfmisc_1\ X0)) \wedge (m1_subset_1\ X2\ (k1_zfmisc_1\ X0))) \Rightarrow (k4_subset_1\ X0\ X1\ X2 = k2_xboole_0\ X1\ X2) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ X0)) \Rightarrow (k3_subset_1\ X0\ (k3_subset_1\ X0\ X1) = X1) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1\ X2\ (k1_zfmisc_1\ X0)) \Rightarrow (m1_subset_1\ (k9_subset_1\ X0\ X1\ X2)\ (k1_zfmisc_1\ X0)) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1\ X1\ (k1_zfmisc_1\ X0)) \Rightarrow (m1_subset_1\ (k7_subset_1\ X0\ X1\ X2)\ (k1_zfmisc_1\ X0)) \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ X0)) \Rightarrow (m1_subset_1\ (k3_subset_1\ X0\ X1)\ (k1_zfmisc_1\ X0)) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.((l1_pre_topc\ X0)\wedge(m1_subset_1\ X1\ (k1_zfmisc_1\ (u1_struct_0\ X0))))\Rightarrow(m1_subset_1\ (k2_pre_topc\ X0\ X1)\ (k1_zfmisc_1\ (u1_struct_0\ X0))) \quad (16)$$

Assume the following.

$$\forall X0.\forall X1.((l1_pre_topc\ X0)\wedge(m1_subset_1\ X1\ (k1_zfmisc_1\ (u1_struct_0\ X0))))\Rightarrow(m1_subset_1\ (k1_tops_1\ X0\ X1)\ (k1_zfmisc_1\ (u1_struct_0\ X0))) \quad (17)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ X0))\Rightarrow(k3_subset_1\ X0\ X1 = k4_xboole_0\ X0\ X1) \quad (18)$$

Assume the following.

$$\forall X0.(l1_pre_topc\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ (u1_struct_0\ X0)))\Rightarrow(k1_tops_1\ X0\ X1 = k3_subset_1\ (u1_struct_0\ X0)\ (k2_pre_topc\ X0\ (k3_subset_1\ (u1_struct_0\ X0)\ X1)))) \quad (19)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1\ X2\ (k1_zfmisc_1\ X0))\Rightarrow(k9_subset_1\ X0\ X1\ X2 = k9_subset_1\ X0\ X2\ X1) \quad (20)$$

Assume the following.

$$\forall X0.\forall X1.k3_xboole_0\ X0\ X1 = k3_xboole_0\ X1\ X0 \quad (21)$$

Theorem 1

$$\forall X0.((v2_pre_topc\ X0)\wedge(l1_pre_topc\ X0))\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ (u1_struct_0\ X0)))\Rightarrow(\forall X2.(m1_subset_1\ X2\ (k1_zfmisc_1\ (u1_struct_0\ X0)))\Rightarrow(r1_tarski\ (k1_tops_1\ X0\ (k7_subset_1\ (u1_struct_0\ X0)\ X1\ X2))\ (k7_subset_1\ (u1_struct_0\ X0)\ (k1_tops_1\ X0\ X1)\ (k1_tops_1\ X0\ X2))))))$$