

t17_borsuk_3 (TMdtgs-
FCX4zW4X1ZrMZwFR3mNaow6p6UA6K)

October 27, 2020

Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_pre_topc : \iota \Rightarrow o$ be given. Let $v1_compts_1 : \iota \Rightarrow o$ 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 $v3_pre_topc : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_borsuk_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_struct_0 : \iota \Rightarrow \iota$ be given. Let $k5_setfam_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_borsuk_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_borsuk_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_tops_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_setfam_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_tarski : \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v1_pre_topc : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (r1_tarski X0 (k3_tarski X1)) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v2_pre_topc X0) \wedge (l1_pre_topc X0)) \Rightarrow (\forall X1. \\ & ((v2_pre_topc X1) \wedge (l1_pre_topc X1)) \Rightarrow (\forall X2. (m1_subset_1 \\ & X2 (k1_zfmisc_1 (u1_struct_0 X0))) \Rightarrow (\forall X3. (m1_subset_1 \\ & X3 (k1_zfmisc_1 (u1_struct_0 X1))) \Rightarrow (((v3_pre_topc X2 X0) \wedge (v3_pre_topc \\ & X3 X1)) \Rightarrow (v3_pre_topc (k3_borsuk_1 X0 X1 X2 X3) (k2_borsuk_1 X0 X1)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((X0 \in X1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 X2))) \Rightarrow (m1_subset_1 X0 X2) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X1 (k1_zfmisc_1 (k1_zfmisc_1 X0))) \Rightarrow ((m1_setfam_1 X1 X0) \Leftrightarrow (k5_setfam_1 X0 X1 = X0)) \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v2_pre_topc\ X0)\wedge(l1_pre_topc\ X0))\Rightarrow(\forall X1. \\ & ((v2_pre_topc\ X1)\wedge(l1_pre_topc\ X1))\Rightarrow(k2_struct_0\ (k2_borsuk_1 \\ & X0\ X1) = k3_borsuk_1\ X0\ X1\ (k2_struct_0\ X0)\ (k2_struct_0\ X1))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v2_pre_topc\ X0)\wedge(l1_pre_topc\ X0))\Rightarrow(\forall X1. \\ & ((v2_pre_topc\ X1)\wedge(l1_pre_topc\ X1))\Rightarrow(\forall X2.(m1_subset_1 \\ & X2\ (k1_zfmisc_1\ (u1_struct_0\ (k2_borsuk_1\ X0\ X1))))\Rightarrow((v3_pre_topc \\ & X2\ (k2_borsuk_1\ X0\ X1))\Rightarrow(X2 = k5_setfam_1\ (u1_struct_0\ (k2_borsuk_1 \\ & X0\ X1))\ (k7_borsuk_1\ X0\ X1\ X2)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.r1_tarski\ X0\ X0 \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ (k1_zfmisc_1\ X0)))\Rightarrow(k5_setfam_1\ X0\ X1 = k3_tarski\ X1) \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v2_pre_topc\ X0)\wedge \\ & (l1_pre_topc\ X0))\wedge(((v2_pre_topc\ X1)\wedge(l1_pre_topc\ X1))\wedge((m1_subset_1 \\ & X2\ (k1_zfmisc_1\ (u1_struct_0\ X0)))\wedge(m1_subset_1\ X3\ (k1_zfmisc_1 \\ & (u1_struct_0\ X1))))))\Rightarrow(k3_borsuk_1\ X0\ X1\ X2\ X3 = k2_zfmisc_1\ X2 \\ & X3) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0\ X0)\wedge(l1_struct_0\ X0))\Rightarrow(\neg v1_xboole_0\ (u1_struct_0\ X0)) \quad (11)$$

Assume the following.

$$\forall X0.((v2_pre_topc\ X0)\wedge(l1_pre_topc\ X0))\Rightarrow(v3_pre_topc\ (k2_struct_0\ X0)\ X0) \quad (12)$$

Assume the following.

$$\forall X0.(l1_pre_topc\ X0)\Rightarrow(l1_struct_0\ X0) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ (k1_zfmisc_1\ X0)))\Rightarrow(m1_subset_1\ (k5_setfam_1\ X0\ X1)\ (k1_zfmisc_1\ X0)) \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v2_pre_topc\ X0)\wedge \\ & (l1_pre_topc\ X0))\wedge(((v2_pre_topc\ X1)\wedge(l1_pre_topc\ X1))\wedge((m1_subset_1 \\ & X2\ (k1_zfmisc_1\ (u1_struct_0\ X0)))\wedge(m1_subset_1\ X3\ (k1_zfmisc_1 \\ & (u1_struct_0\ X1))))))\Rightarrow(m1_subset_1\ (k3_borsuk_1\ X0\ X1\ X2\ X3)\ (\\ & k1_zfmisc_1\ (u1_struct_0\ (k2_borsuk_1\ X0\ X1)))) \end{aligned} \quad (15)$$

Assume the following.

$$\forall X0.(l1_struct_0\ X0)\Rightarrow(m1_subset_1\ (k2_struct_0\ X0)\ (k1_zfmisc_1\ (u1_struct_0\ X0))) \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((v2_pre_topc\ X0)\wedge(l1_pre_topc\ X0))\wedge \\ & ((v2_pre_topc\ X1)\wedge(l1_pre_topc\ X1)))\Rightarrow((v1_pre_topc\ (k2_borsuk_1 \\ & X0\ X1))\wedge((v2_pre_topc\ (k2_borsuk_1\ X0\ X1))\wedge(l1_pre_topc\ (k2_borsuk_1 \\ & X0\ X1)))) \end{aligned} \quad (17)$$

Assume the following.

$$\forall X0.\forall X1.(r1_tarski\ X0\ X1)\Leftrightarrow(\forall X2.(X2 \in X0)\Rightarrow (X2 \in X1)) \quad (18)$$

Assume the following.

$$\forall X0.(l1_struct_0\ X0)\Rightarrow(k2_struct_0\ X0 = u1_struct_0\ X0) \quad (19)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_pre_topc\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1 \\ & (k1_zfmisc_1\ (u1_struct_0\ X0))))\Rightarrow((v1_tops_2\ X1\ X0)\Leftrightarrow(\forall X2. \\ & (m1_subset_1\ X2\ (k1_zfmisc_1\ (u1_struct_0\ X0)))\Rightarrow((X2 \in X1)\Rightarrow(v3_pre_topc \\ & X2\ X0)))))) \end{aligned} \quad (20)$$

Assume the following.

$$\forall X0.\forall X1.(X0 = X1)\Leftrightarrow((r1_tarski\ X0\ X1)\wedge(r1_tarski\ X1\ X0)) \quad (21)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0\ X0)\wedge((v2_pre_topc\ X0)\wedge((v1_compts_1 \\ & X0)\wedge(l1_pre_topc\ X0))))\Rightarrow(\forall X1.((\neg v2_struct_0\ X1)\wedge((v2_pre_topc \\ & X1)\wedge((v1_compts_1\ X1)\wedge(l1_pre_topc\ X1))))\Rightarrow(\forall X2.(m1_subset_1 \\ & X2\ (k1_zfmisc_1\ (k1_zfmisc_1\ (u1_struct_0\ X0))))\Rightarrow((X2 = ReplSep \\ & (toset\ (\lambda X3 : \iota.(v3_pre_topc\ X3\ X0)\wedge(m1_subset_1\ X3\ (k1_zfmisc_1 \\ & (u1_struct_0\ X0))))))\ (\lambda X3 : \iota.r1_tarski\ (k3_borsuk_1\ X1\ X0 \\ & (k2_struct_0\ X1)\ X3)\ (k5_setfam_1\ (u1_struct_0\ (k2_borsuk_1\ X1 \\ & X0))\ (k7_borsuk_1\ X1\ X0\ (k2_struct_0\ (k2_borsuk_1\ X1\ X0))))))\ (\lambda X3 : \\ & \iota.X3))\Rightarrow((v1_tops_2\ X2\ X0)\wedge(m1_setfam_1\ X2\ (k2_struct_0\ X0)))))) \end{aligned}$$