

## t8\_borsuk\_1

(TMWBdfKJfyKZoA4SybRj3i8hYRURZ7eH4ap)

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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  $m1\_connsp\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_borsuk\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_borsuk\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_borsuk\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_tops\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(k4\_tarski\ X0\ X1 \in k2\_zfmisc\_1\ X2\ X3) \Leftrightarrow ((X0 \in X2) \wedge (X1 \in X3)) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v2\_pre\_topc\ X0) \wedge (l1\_pre\_topc\ X0)) \Rightarrow (\forall X1. \\ & ((v2\_pre\_topc\ X1) \wedge (l1\_pre\_topc\ X1)) \Rightarrow (\forall X2.(m1\_subset\_1 \\ & X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \Rightarrow (\forall X3.(m1\_subset\_1 \\ & X3\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X1))) \Rightarrow (k1\_tops\_1\ (k2\_borsuk\_1\ X0 \\ & X1)\ (k3\_borsuk\_1\ X0\ X1\ X2\ X3) = k3\_borsuk\_1\ X0\ X1\ (k1\_tops\_1\ X0\ X2) \\ & (k1\_tops\_1\ X1\ X3)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\ & X0) \wedge ((v2\_pre\_topc\ X0) \wedge (l1\_pre\_topc\ X0))) \wedge (((\neg v2\_struct\_0\ X1) \wedge \\ & ((v2\_pre\_topc\ X1) \wedge (l1\_pre\_topc\ X1))) \wedge ((m1\_subset\_1\ X2\ (u1\_struct\_0 \\ & X0)) \wedge (m1\_subset\_1\ X3\ (u1\_struct\_0\ X1)))))) \Rightarrow (k4\_borsuk\_1\ X0\ X1 \\ & X2\ X3 = k4\_tarski\ X2\ X3) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v2\_pre\_topc\ X0)\wedge \\ & (l1\_pre\_topc\ X0))\wedge(((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc\ X1))\wedge((m1\_subset\_1 \\ & X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\wedge(m1\_subset\_1\ X3\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X1))))))\Rightarrow(k3\_borsuk\_1\ X0\ X1\ X2\ X3 = k2\_zfmisc\_1\ X2 \\ & X3) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge \\ & (l1\_pre\_topc\ X0)))\wedge((\neg v2\_struct\_0\ X1)\wedge((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc \\ & X1))))\Rightarrow((\neg v2\_struct\_0\ (k2\_borsuk\_1\ X0\ X1))\wedge((v1\_pre\_topc\ (k2\_borsuk\_1 \\ & X0\ X1))\wedge(v2\_pre\_topc\ (k2\_borsuk\_1\ X0\ X1)))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge \\ & (l1\_pre\_topc\ X0)))\wedge(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)))\Rightarrow(\forall X2. \\ & (m1\_connsp\_2\ X2\ X0\ X1)\Rightarrow(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & X0)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\ & X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0)))\wedge(((\neg v2\_struct\_0\ X1)\wedge \\ & ((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc\ X1)))\wedge((m1\_subset\_1\ X2\ (u1\_struct\_0 \\ & X0))\wedge(m1\_subset\_1\ X3\ (u1\_struct\_0\ X1))))))\Rightarrow(m1\_subset\_1\ (k4\_borsuk\_1 \\ & X0\ X1\ X2\ X3)\ (u1\_struct\_0\ (k2\_borsuk\_1\ X0\ X1))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v2\_pre\_topc\ X0)\wedge \\ & (l1\_pre\_topc\ X0))\wedge(((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc\ X1))\wedge((m1\_subset\_1 \\ & X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\wedge(m1\_subset\_1\ X3\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X1))))))\Rightarrow(m1\_subset\_1\ (k3\_borsuk\_1\ X0\ X1\ X2\ X3)\ ( \\ & k1\_zfmisc\_1\ (u1\_struct\_0\ (k2\_borsuk\_1\ X0\ X1)))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\wedge \\ & ((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc\ X1)))\Rightarrow((v1\_pre\_topc\ (k2\_borsuk\_1 \\ & X0\ X1))\wedge((v2\_pre\_topc\ (k2\_borsuk\_1\ X0\ X1))\wedge(l1\_pre\_topc\ (k2\_borsuk\_1 \\ & X0\ X1)))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((l1\_pre\_topc\ X0)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k1\_tops\_1\ X0\ X1)\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.k4\_tarSKI X0 X1 = k2\_tarSKI (k2\_tarSKI X0 X1) (k1\_tarSKI X0) \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0)) \Rightarrow ((m1\_connsp\_2 X2 X0 X1) \Leftrightarrow (X1 \in k1\_tops\_1 X0 X2)))))) \quad (12) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.k2\_tarSKI X0 X1 = k2\_tarSKI X1 X0 \quad (13)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc X1)))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. \\ (m1\_subset\_1 X3 (u1\_struct\_0 X1)) \Rightarrow (\forall X4.(m1\_connsp\_2 X4 X0 X2) \Rightarrow (\forall X5.(m1\_connsp\_2 X5 X1 X3) \Rightarrow (m1\_connsp\_2 (k3\_borsuk\_1 X0 X1 X4 X5) (k2\_borsuk\_1 X0 X1) (k4\_borsuk\_1 X0 X1 X2 X3))))))) \end{aligned}$$