

## t9\_borsuk\_1

(TMP4Pnet2dYNpMa9Sye6jYPzAEftgFHDxLL)

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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  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $m2\_connsp\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tops\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((r1\_tarski X0 X1) \wedge \\ & (r1\_tarski X2 X3)) \Rightarrow (r1\_tarski (k2\_zfmisc\_1 X0 X2) (k2\_zfmisc\_1 \\ & X1 X3)) \end{aligned} \quad (1)$$

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.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. (((v2\_pre\_topc X0) \wedge \\ & (l1\_pre\_topc X0)) \wedge (((v2\_pre\_topc X1) \wedge (l1\_pre\_topc X1)) \wedge ((m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X1)))))) \Rightarrow (k3\_borsuk\_1 X0 X1 X2 X3 = k2\_zfmisc\_1 X2 \\ & X3)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((v2\_pre\_topc X0) \wedge (l1\_pre\_topc X0)) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \Rightarrow (\forall X2. \\ & (m2\_connsp\_2 X2 X0 X1) \Rightarrow (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v2\_pre\_topc\ X0)\wedge \\ & (l1\_pre\_topc\ X0))\wedge(((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc\ X1))\wedge((m1\_subset\_1 \\ & X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X3\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X1))))))\Rightarrow(m1\_subset\_1\ (k3\_borsuk\_1\ X0\ X1\ X2\ X3)\ ( \\ & k1\_zfmisc\_1\ (u1\_struct\_0\ (k2\_borsuk\_1\ X0\ X1)))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\wedge \\ & ((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc\ X1)))\Rightarrow((v1\_pre\_topc\ (k2\_borsuk\_1 \\ & X0\ X1))\wedge((v2\_pre\_topc\ (k2\_borsuk\_1\ X0\ X1))\wedge(l1\_pre\_topc\ (k2\_borsuk\_1 \\ & X0\ X1)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((l1\_pre\_topc\ X0)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k1\_tops\_1\ X0\ X1)\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X0))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1. \\ & (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(\forall X2. \\ & (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow((m2\_connsp\_2 \\ & X2\ X0\ X1)\Leftrightarrow(r1\_tarski\ X1\ (k1\_tops\_1\ X0\ X2)))))) \end{aligned} \quad (8)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc \\ & X0)))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc \\ & X1)))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & X0)))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & X1)))\Rightarrow(\forall X4.(m2\_connsp\_2\ X4\ X0\ X2))\Rightarrow(\forall X5.(m2\_connsp\_2 \\ & X5\ X1\ X3))\Rightarrow(m2\_connsp\_2\ (k3\_borsuk\_1\ X0\ X1\ X4\ X5)\ (k2\_borsuk\_1\ X0 \\ & X1)\ (k3\_borsuk\_1\ X0\ X1\ X2\ X3)))))) \end{aligned}$$