

## t29\_borsuk\_1

(TMND7Geo14WpVyBWqu3Eq53HuP7BwiaodkC)

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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  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_eqrel\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k11\_borsuk\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k12\_borsuk\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k13\_eqrel\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $u1\_pre\_topc : \iota \Rightarrow \iota$  be given. Let  $k3\_tarski : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((\neg v1\_xboole\_0 X1) \wedge \\ (m1\_eqrel\_1 X1 X0)) \Rightarrow (\forall X2.(m2\_subset\_1 X2 (k1\_zfmisc\_1 \\ X0) X1) \Rightarrow (\exists X3.(m1\_subset\_1 X3 X0) \wedge (k3\_funct\_2 X0 X1 (k13\_eqrel\_1 \\ X0 X1) X3 = X2)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\ X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1)) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 \\ (u1\_struct\_0 X0)) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.(m1\_eqrel\_1 X1 X0) \Rightarrow (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (k1\_zfmisc\_1 X0))) \tag{4}$$

Assume the following.

$$\forall X0.(l1\_pre\_topc X0) \Rightarrow (l1\_struct\_0 X0) \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((v2\_pre\_topc\ X0) \wedge (l1\_pre\_topc\ X0)) \wedge \\ & (m1\_eqrel\_1\ X1\ (u1\_struct\_0\ X0))) \Rightarrow ((v1\_pre\_topc\ (k11\_borsuk\_1 \\ & X0\ X1)) \wedge ((v2\_pre\_topc\ (k11\_borsuk\_1\ X0\ X1)) \wedge (l1\_pre\_topc\ (k11\_borsuk\_1 \\ & X0\ X1)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0\ X0) \wedge ((v2\_pre\_topc\ X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1. ((\neg v1\_xboole\_0\ X1) \wedge (m1\_eqrel\_1\ X1\ (u1\_struct\_0 \\ & X0))) \Rightarrow (k12\_borsuk\_1\ X0\ X1 = k13\_eqrel\_1\ (u1\_struct\_0\ X0\ X1))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v2\_pre\_topc\ X0) \wedge (l1\_pre\_topc\ X0)) \Rightarrow (\forall X1. \\ & (m1\_eqrel\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2. ((v1\_pre\_topc\ X2) \wedge \\ & ((v2\_pre\_topc\ X2) \wedge (l1\_pre\_topc\ X2))) \Rightarrow ((X2 = k11\_borsuk\_1\ X0\ X1) \Leftrightarrow \\ & ((u1\_struct\_0\ X2 = X1) \wedge (u1\_pre\_topc\ X2 = ReplSep\ (toset\ (\lambda X3 : \\ & \iota.m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ X1))) (\lambda X3 : \iota.k3\_tarski \\ & X3 \in u1\_pre\_topc\ X0)\ (\lambda X3 : \iota.X3)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0. (v1\_xboole\_0\ X0) \Rightarrow (\forall X1. (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0)) \Rightarrow (v1\_xboole\_0\ X1)) \quad (9)$$

**Theorem 1**

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0\ X0) \wedge ((v2\_pre\_topc\ X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1. ((\neg v1\_xboole\_0\ X1) \wedge (m1\_eqrel\_1\ X1\ (u1\_struct\_0 \\ & X0))) \Rightarrow (\forall X2. (m1\_subset\_1\ X2\ (u1\_struct\_0\ (k11\_borsuk\_1 \\ & X0\ X1))) \Rightarrow (\exists X3. (m1\_subset\_1\ X3\ (u1\_struct\_0\ X0)) \wedge (k3\_funct\_2 \\ & (u1\_struct\_0\ X0)\ (u1\_struct\_0\ (k11\_borsuk\_1\ X0\ X1))\ (k12\_borsuk\_1 \\ & X0\ X1)\ X3 = X2)))) \end{aligned}$$