

t4\_connsp\_1  
(TMLeYdeMGc9ogC576rx1zRdv4GLyoFSKhRt)

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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  $k2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_connsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $k7\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. \forall X2. ((r1\_tarski X0 (k2\_xboole\_0 X1 X2)) \wedge (r1\_xboole\_0 X0 X2)) \Rightarrow (r1\_tarski X0 X1) \quad (1)$$

Assume the following.

$$\forall X0. (l1\_struct\_0 X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (((k2\_struct\_0 X0 = k4\_subset\_1 (u1\_struct\_0 X0) X1 X2) \wedge (r1\_xboole\_0 X1 X2)) \Rightarrow (X2 = k7\_subset\_1 (u1\_struct\_0 X0) (k2\_struct\_0 X0) X1)))))) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 (k1\_zfmisc\_1 X1)) \Leftrightarrow (r1\_tarski X0 X1) \quad (3)$$

Assume the following.

$$\forall X0. (l1\_pre\_topc X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (((v3\_pre\_topc X1 X0) \Rightarrow (k2\_pre\_topc X0 (k7\_subset\_1 (u1\_struct\_0 X0) (k2\_struct\_0 X0) X1) = k7\_subset\_1 (u1\_struct\_0 X0) (k2\_struct\_0 X0) X1)) \wedge (((v2\_pre\_topc X0) \wedge (k2\_pre\_topc X0 (k7\_subset\_1 (u1\_struct\_0 X0) (k2\_struct\_0 X0) X1) = k7\_subset\_1 (u1\_struct\_0 X0) (k2\_struct\_0 X0) X1)) \Rightarrow (v3\_pre\_topc X1 X0)))))) \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_pre\_topc\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0))) \Rightarrow (((v4\_pre\_topc\ X1\ X0) \Rightarrow (k2\_pre\_topc\ X0\ X1 = \\ X1)) \wedge (((v2\_pre\_topc\ X0) \wedge (k2\_pre\_topc\ X0\ X1 = X1)) \Rightarrow (v4\_pre\_topc \\ X1\ X0)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_pre\_topc\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0))) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0))) \Rightarrow ((r1\_connsp\_1\ X0\ X1\ X2) \Rightarrow (r1\_xboole\_0\ X1\ X2)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_pre\_topc\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0))) \Rightarrow (r1\_tarSKI\ X1\ (k2\_pre\_topc\ X0\ X1))) \end{aligned} \quad (7)$$

Assume the following.

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

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ X0)) \wedge (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0))) \Rightarrow (k4\_subset\_1\ X0\ X1\ X2 = \\ k2\_xboole\_0\ X1\ X2) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0) \Rightarrow (l1\_struct\_0\ X0) \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((l1\_pre\_topc\ X0) \wedge (m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0)))) \Rightarrow (m1\_subset\_1\ (k2\_pre\_topc\ X0\ X1)\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.(l1\_struct\_0\ X0) \Rightarrow (k2\_struct\_0\ X0 = u1\_struct\_0\ X0) \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_pre\_topc\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0))) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ X0))) \Rightarrow ((r1\_connsp\_1\ X0\ X1\ X2) \Leftrightarrow ((r1\_xboole\_0\ (k2\_pre\_topc \\ X0\ X1)\ X2) \wedge (r1\_xboole\_0\ X1\ (k2\_pre\_topc\ X0\ X2)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.(X0 = X1)\Leftrightarrow((r1\_tarski\ X0\ X1)\wedge(r1\_tarski\ X1\ X0)) \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ X0))\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0)))\Rightarrow(k4\_subset\_1\ X0\ X1\ X2 = \\ k4\_subset\_1\ X0\ X2\ X1) \end{aligned} \quad (15)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1. \\ (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(\forall X2. \\ (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(((k2\_struct\_0 \\ X0 = k4\_subset\_1\ (u1\_struct\_0\ X0)\ X1\ X2)\wedge(r1\_connsp\_1\ X0\ X1\ X2))\Rightarrow \\ ((v3\_pre\_topc\ X1\ X0)\wedge((v4\_pre\_topc\ X1\ X0)\wedge((v3\_pre\_topc\ X2\ X0)\wedge \\ (v4\_pre\_topc\ X2\ X0))))))) \end{aligned}$$