

## t23\_tex\_1

(TMU5hKumjwsgZkSqLK5VMA8ZmhdUTQWdYs9)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_tex\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_tops\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v4\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_tops\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_setfam\_1 : \iota \Rightarrow \iota$  be given. Let  $k7\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $g1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $k2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_pre\_topc : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (X0 = k1\_xboole\_0) \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (u1\_struct\_0 X0))) \Rightarrow ((v3\_pre\_topc X1 X0) \Leftrightarrow (v4\_pre\_topc (k3\_subset\_1 \\ (u1\_struct\_0 X0) X1) X0))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0.k4\_xboole\_0 X0 k1\_xboole\_0 = X0 \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 X0) \Rightarrow \\ (\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 (k3\_tex\_1 \\ X0 X1)))) \Rightarrow (((r1\_tarski X2 (k6\_subset\_1 X0 (k6\_domain\_1 X0 X1))) \Rightarrow \\ (v3\_pre\_topc X2 (k3\_tex\_1 X0 X1))) \wedge ((v3\_pre\_topc X2 (k3\_tex\_1 \\ X0 X1)) \Rightarrow ((X2 = X0) \vee (r1\_tarski X2 (k6\_subset\_1 X0 (k6\_domain\_1 X0 \\ X1)))))))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 X0) \Rightarrow \\ & ((\neg v1\_xboole\_0 (k6\_subset\_1 X0 (k6\_domain\_1 X0 X1))) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 (k3\_tex\_1 X0 X1)))) \Rightarrow \\ & (((X2 = k6\_domain\_1 X0 X1) \Rightarrow ((v4\_pre\_topc X2 (k3\_tex\_1 X0 X1)) \wedge ( \\ & v2\_tops\_1 X2 (k3\_tex\_1 X0 X1)))) \wedge (((v4\_pre\_topc X2 (k3\_tex\_1 X0 \\ & X1)) \wedge (v2\_tops\_1 X2 (k3\_tex\_1 X0 X1))) \Rightarrow ((v1\_xboole\_0 X2) \vee (X2 = \\ & k6\_domain\_1 X0 X1)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.r1\_tarski X0 X0 \quad (6)$$

Assume the following.

$$\forall X0.k9\_setfam\_1 X0 = k1\_zfmisc\_1 X0 \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & X0)) \Rightarrow (k7\_subset\_1 X0 X1 X2 = k4\_xboole\_0 X1 X2) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.k6\_subset\_1 X0 X1 = k4\_xboole\_0 X0 X1 \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge (m1\_subset\_1 X1 X0)) \Rightarrow \\ & (k6\_domain\_1 X0 X1 = k1\_tarski X1) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_pre\_topc X0) \Rightarrow (\exists X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))) \wedge (v1\_tops\_1 X1 X0)) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \Rightarrow (k3\_subset\_1 \\ & X0 (k3\_subset\_1 X0 X1) = X1) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & X0))) \Rightarrow (\forall X2.\forall X3.(g1\_pre\_topc X0 X1 = g1\_pre\_topc \\ & X2 X3) \Rightarrow ((X0 = X2) \wedge (X1 = X3))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(m1\_subset\_1 X1 X0) \Rightarrow ((v1\_pre\_topc (k3\_tex\_1 \\ & X0 X1)) \wedge (v2\_pre\_topc (k3\_tex\_1 X0 X1))) \end{aligned} \quad (14)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(v1\_tops\_1\ (k2\_struct\_0\ X0)\ X0) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.m1\_subset\_1\ (k6\_subset\_1\ X0\ X1)\ (k1\_zfmisc\_1\ X0) \quad (16)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0\ X0)\wedge(m1\_subset\_1\ X1\ X0))\Rightarrow(m1\_subset\_1\ (k6\_domain\_1\ X0\ X1)\ (k1\_zfmisc\_1\ X0)) \quad (17)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1\ X1\ X0)\Rightarrow(l1\_pre\_topc\ (k3\_tex\_1\ X0\ X1)) \quad (18)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow((v2\_tops\_1\ X1\ X0)\Leftrightarrow(v1\_tops\_1\ (k3\_subset\_1\ (u1\_struct\_0\ X0)\ X1)\ X0)) \quad (19)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1\ X1\ X0)\Rightarrow(k3\_tex\_1\ X0\ X1 = g1\_pre\_topc\ X0\ (k7\_subset\_1\ (k1\_zfmisc\_1\ X0)\ (k9\_setfam\_1\ X0)\ (ReplSep\ (toset\ (\lambda X2 : \iota.m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0))))\ (\lambda X2 : \iota.(X1 \in X2)\wedge(X2\neq X0))\ (\lambda X2 : \iota.X2)))) \quad (20)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0))\Rightarrow(k3\_subset\_1\ X0\ X1 = k4\_xboole\_0\ X0\ X1) \quad (21)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow((v1\_tops\_1\ X1\ X0)\Leftrightarrow(k2\_pre\_topc\ X0\ X1 = k2\_struct\_0\ X0)) \quad (22)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow((v1\_tops\_1\ X1\ X0)\Leftrightarrow(k2\_pre\_topc\ X0\ X1 = u1\_struct\_0\ X0)) \quad (23)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow((v1\_pre\_topc\ X0)\Rightarrow(X0 = g1\_pre\_topc\ (u1\_struct\_0\ X0)\ (u1\_pre\_topc\ X0))) \quad (24)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 X0) \Rightarrow \\ & ((\neg v1\_xboole\_0 (k6\_subset\_1 X0 (k6\_domain\_1 X0 X1))) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 (k3\_tex\_1 X0 X1)))) \Rightarrow \\ & (((X2 = k6\_subset\_1 X0 (k6\_domain\_1 X0 X1)) \Rightarrow ((v3\_pre\_topc X2 (k3\_tex\_1 \\ & X0 X1)) \wedge (v1\_tops\_1 X2 (k3\_tex\_1 X0 X1)))) \wedge (((v3\_pre\_topc X2 (k3\_tex\_1 \\ & X0 X1)) \wedge (v1\_tops\_1 X2 (k3\_tex\_1 X0 X1))) \Rightarrow ((X2 = X0) \vee (X2 = k6\_subset\_1 \\ & X0 (k6\_domain\_1 X0 X1)))))))))) \end{aligned}$$