

## t70\_tdlat\_2

(TMFktnzmNtbH76PFfgLN8c1ec569M3Pm3LT)

October 27, 2020

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  $v1\_tdlat\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_tops\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_setfam\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tops\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_tops\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((v2\_pre\_topc X0) \wedge (l1\_pre\_topc X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow ((r1\_tarski \\ & (k1\_tops\_1 X0 (k2\_pre\_topc X0 X1)) X1) \Rightarrow (r1\_tarski (k1\_tops\_1 X0 \\ & (k2\_pre\_topc X0 (k9\_subset\_1 (u1\_struct\_0 X0) X1) (k2\_pre\_topc \\ & X0 (k1\_tops\_1 X0 X1)))) (k9\_subset\_1 (u1\_struct\_0 X0) X1) (k2\_pre\_topc \\ & X0 (k1\_tops\_1 X0 X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0)))) \Rightarrow ((v1\_tdlat\_2 X1 X0) \Rightarrow ((r1\_tarski (k1\_tops\_1 \\ & X0 (k2\_pre\_topc X0 (k6\_setfam\_1 (u1\_struct\_0 X0) X1))) (k6\_setfam\_1 \\ & (u1\_struct\_0 X0) X1)) \wedge (k1\_tops\_1 X0 (k2\_pre\_topc X0 (k1\_tops\_1 \\ & X0 (k6\_setfam\_1 (u1\_struct\_0 X0) X1))) = k1\_tops\_1 X0 (k6\_setfam\_1 \\ & (u1\_struct\_0 X0) X1)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0. \forall X1. r1\_tarski (k3\_xboole\_0 X0 X1) X0 \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1. \\ & (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(\forall X2. \\ & (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(k9\_subset\_1 \\ & (u1\_struct\_0\ X0)\ (k1\_tops\_1\ X0\ X1)\ (k1\_tops\_1\ X0\ X2) = k1\_tops\_1 \\ & X0\ (k9\_subset\_1\ (u1\_struct\_0\ X0)\ X1\ X2)))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0))\Rightarrow(k9\_subset\_1\ X0\ X1\ X2 = k3\_xboole\_0\ X1\ X2) \quad (5)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\exists X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\wedge(v2\_tops\_1\ X1\ X0)) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0))\Rightarrow(k9\_subset\_1\ X0\ X1\ X1 = X1) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ X0))\Rightarrow(m1\_subset\_1\ (k9\_subset\_1\ X0\ X1\ X2)\ (k1\_zfmisc\_1\ X0)) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k1\_zfmisc\_1\ X0)))\Rightarrow(m1\_subset\_1\ (k6\_setfam\_1\ X0\ X1)\ (k1\_zfmisc\_1\ X0)) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.((l1\_pre\_topc\ X0)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k2\_pre\_topc\ X0\ X1)\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.((l1\_pre\_topc\ X0)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k1\_tops\_1\ X0\ X1)\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))) \quad (11)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow((v4\_tops\_1\ X1\ X0)\Leftrightarrow((r1\_tarski\ (k1\_tops\_1\ X0\ (k2\_pre\_topc\ X0\ X1))\ X1)\wedge(r1\_tarski\ X1\ (k2\_pre\_topc\ X0\ (k1\_tops\_1\ X0\ X1)))))) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 X0))\Rightarrow(k9\_subset\_1 X0 X1 X2 = k9\_subset\_1 X0 X2 X1) \quad (13)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((v2\_pre\_topc X0)\wedge(l1\_pre\_topc \\ & X0)))\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))\Rightarrow((v1\_tdlat\_2 X1 X0)\Rightarrow(v4\_tops\_1 (k9\_subset\_1 \\ & (u1\_struct\_0 X0) (k6\_setfam\_1 (u1\_struct\_0 X0) X1) (k2\_pre\_topc \\ & X0 (k1\_tops\_1 X0 (k6\_setfam\_1 (u1\_struct\_0 X0) X1)))) X0))) \end{aligned}$$