

t10\_lopclset  
(TMbPJ3UYJGvdC3zvaWLKEfqzrNEWGNwbYtz)

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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  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k6\_lopclset : \iota \Rightarrow \iota$  be given. Let  $k3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_lattices : \iota \Rightarrow o$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $k1\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_lopclset : \iota \Rightarrow \iota$  be given. Let  $k2\_lopclset : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $g3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $k5\_lopclset : \iota \Rightarrow \iota$  be given. Let  $k4\_lopclset : \iota \Rightarrow \iota$  be given. Let  $v3\_lattices : \iota \Rightarrow o$  be given. Let  $k5\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u2\_lattices : \iota \Rightarrow \iota$  be given. Let  $v5\_lattices : \iota \Rightarrow o$  be given. Let  $v6\_lattices : \iota \Rightarrow o$  be given. Let  $v7\_lattices : \iota \Rightarrow o$  be given. Let  $v8\_lattices : \iota \Rightarrow o$  be given. Let  $v9\_lattices : \iota \Rightarrow o$  be given. Let  $u1\_lattices : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. \neg (X0 \in X1) \wedge (v1\_xboole\_0 X1) \quad (1)$$

Assume the following.

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

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge (v4\_lattices \\ X0) \wedge (l2\_lattices X0))) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge \\ (m1\_subset\_1 X2 (u1\_struct\_0 X0))) \Rightarrow (k3\_lattices X0 X1 X2 = k1\_lattices \\ X0 X1 X2) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((v2\_pre\_topc X0)\wedge(l1\_pre\_topc X0)))\wedge((m1\_subset\_1 X1 (k1\_lopclset X0))\wedge(m1\_subset\_1 X2 (k1\_lopclset X0))))\Rightarrow(k2\_lopclset X0 X1 X2 = k2\_xboole\_0 X1 X2) \quad (4)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v2\_pre\_topc X0)\wedge(l1\_pre\_topc X0)))\Rightarrow(\exists X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))\wedge((\neg v1\_xboole\_0 X1)\wedge((v3\_pre\_topc X1 X0)\wedge(v4\_pre\_topc X1 X0)))) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_funct\_1 X1)\wedge((v1\_funct\_2 X1 (k2\_zfmisc\_1 X0 X0) X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0))))\wedge((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 (k2\_zfmisc\_1 X0 X0) X0)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0))))))\Rightarrow(\forall X3.\forall X4.\forall X5.(g3\_lattices X0 X1 X2 = g3\_lattices X3 X4 X5)\Rightarrow((X0 = X3)\wedge((X1 = X4)\wedge(X2 = X5)))) \quad (6)$$

Assume the following.

$$\forall X0.\neg v1\_xboole\_0 (k1\_zfmisc\_1 X0) \quad (7)$$

Assume the following.

$$\forall X0.(l3\_lattices X0)\Rightarrow((l1\_lattices X0)\wedge(l2\_lattices X0)) \quad (8)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v2\_pre\_topc X0)\wedge(l1\_pre\_topc X0)))\Rightarrow((\neg v2\_struct\_0 (k6\_lopclset X0))\wedge((v10\_lattices (k6\_lopclset X0))\wedge(l3\_lattices (k6\_lopclset X0)))) \quad (9)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v2\_pre\_topc X0)\wedge(l1\_pre\_topc X0)))\Rightarrow((v1\_funct\_1 (k5\_lopclset X0))\wedge((v1\_funct\_2 (k5\_lopclset X0) (k2\_zfmisc\_1 (k1\_lopclset X0) (k1\_lopclset X0)) (k1\_lopclset X0))\wedge(m1\_subset\_1 (k5\_lopclset X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_lopclset X0) (k1\_lopclset X0)) (k1\_lopclset X0)))))) \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ X0))) \Rightarrow ((v1\_funct\_1 (k4\_lopclset X0)) \wedge ((v1\_funct\_2 (k4\_lopclset \\ X0) (k2\_zfmisc\_1 (k1\_lopclset X0) (k1\_lopclset X0)) (k1\_lopclset \\ X0)) \wedge (m1\_subset\_1 (k4\_lopclset X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ (k2\_zfmisc\_1 (k1\_lopclset X0) (k1\_lopclset X0)) (k1\_lopclset \\ X0)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_pre\_topc X0)) \Rightarrow (m1\_subset\_1 \\ (k1\_lopclset X0) (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 \\ X1 (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ (k2\_zfmisc\_1 X0 X0) X0)))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 \\ (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ (k2\_zfmisc\_1 X0 X0) X0)))))) \Rightarrow ((v3\_lattices (g3\_lattices X0 X1 \\ X2)) \wedge (l3\_lattices (g3\_lattices X0 X1 X2))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ X0))) \Rightarrow (k6\_lopclset X0 = g3\_lattices (k1\_lopclset X0) (k4\_lopclset \\ X0) (k5\_lopclset X0)) \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ X0))) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 \\ (k1\_lopclset X0) (k1\_lopclset X0)) (k1\_lopclset X0)) \wedge (m1\_subset\_1 \\ X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_lopclset X0) (k1\_lopclset \\ X0)) (k1\_lopclset X0)))))) \Rightarrow ((X1 = k4\_lopclset X0) \Leftrightarrow (\forall X2. \\ (m2\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0)) (k1\_lopclset X0)) \Rightarrow \\ (\forall X3.(m2\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 X0)) (k1\_lopclset \\ X0)) \Rightarrow (k5\_binop\_1 (k1\_lopclset X0) X1 X2 X3 = k2\_lopclset X0 X2 X3)))))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_pre\_topc X0)) \Rightarrow (k1\_lopclset \\ X0 = ReplSep (toset (\lambda X1 : \iota. m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ X0)))) (\lambda X1 : \iota. (v3\_pre\_topc X1 X0) \wedge (v4\_pre\_topc X1 X0)) ( \\ \lambda X1 : \iota. X1)) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_lattices X0)) \Rightarrow (\forall X1. \\ (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\ (u1\_struct\_0 X0)) \Rightarrow (k1\_lattices X0 X1 X2 = k5\_binop\_1 (u1\_struct\_0 \\ X0) (u2\_lattices X0) X1 X2))) \end{aligned} \quad (17)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3\_lattices X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v10\_lattices \\ X0)) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge ((v4\_lattices X0) \wedge ((v5\_lattices X0) \wedge \\ ((v6\_lattices X0) \wedge ((v7\_lattices X0) \wedge ((v8\_lattices X0) \wedge (v9\_lattices \\ X0)))))))) \end{aligned} \quad (18)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3\_lattices X0) \Rightarrow ((v3\_lattices X0) \Rightarrow (X0 = g3\_lattices \\ (u1\_struct\_0 X0) (u2\_lattices X0) (u1\_lattices X0))) \end{aligned} \quad (19)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 (k6\_lopclset \\ X0))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 (k6\_lopclset \\ X0))) \Rightarrow (k3\_lattices (k6\_lopclset X0) X1 X2 = k2\_xboole\_0 X1 X2))) \end{aligned}$$