

## t17\_lattice4

(TMcbbc9XxsMdEoAPmbiaL9kNrchGLnTiqJNp)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $v13\_lattices : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $v20\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v21\_lattices : \iota \Rightarrow \iota \Rightarrow o$  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  $k5\_lattices : \iota \Rightarrow \iota$  be given. Let  $k5\_finsub\_1 : \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_lattice4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $k5\_setwiseo : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_setwiseo : \iota \Rightarrow \iota \Rightarrow \iota$  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  $k1\_setwiseo : \iota \Rightarrow \iota$  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  $k2\_lattice2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $k3\_struct\_0 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. \forall X2. \neg (X0 \in X1) \wedge ((m1\_subset\_1 X1 (k1\_zfmisc\_1 X2)) \wedge (v1\_xboole\_0 X2)) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((X0 \in X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 X2))) \Rightarrow (m1\_subset\_1 X0 X2) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. (r1\_tarski (k1\_tarski X0) X1) \Leftrightarrow (X0 \in X1) \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge ((v13\_lattices \\ X0) \wedge (l3\_lattices X0)))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k5\_finsub\_1 \\ (u1\_struct\_0 X0))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 \\ X0))) \Rightarrow (k1\_lattice4 X0 (k5\_setwiseo (u1\_struct\_0 X0) X1 (k2\_setwiseo \\ (u1\_struct\_0 X0) X2)) = k3\_lattices X0 (k1\_lattice4 X0 X1) X2))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(r1\_tarSKI (k2\_xboole\_0 X0 X1) X2)\Rightarrow(r1\_tarSKI X0 X2) \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0 : \iota \Rightarrow o.\forall X1.((X0 (k1\_setwiseo X1))\wedge(\forall X2. \\ (m1\_subset\_1 X2 (k5\_finsub\_1 X1))\Rightarrow(\forall X3.(m1\_subset\_1 X3 \\ X1)\Rightarrow((X0 X2)\Rightarrow(X0 (k2\_xboole\_0 X2 (k1\_tarSKI X3))))))\Rightarrow(\forall X2. \\ (m1\_subset\_1 X2 (k5\_finsub\_1 X1))\Rightarrow(X0 X2))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((m1\_subset\_1 X1 (k5\_finsub\_1 \\ X0))\wedge(m1\_subset\_1 X2 (k5\_finsub\_1 X0)))\Rightarrow(k5\_setwiseo X0 X1 X2 = \\ k2\_xboole\_0 X1 X2) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X1 X0))\Rightarrow(k2\_setwiseo X0 X1 = k1\_tarSKI X1) \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge((v13\_lattices \\ X0)\wedge(l3\_lattices X0))))\Rightarrow(\forall X1.((v1\_funct\_1 X1)\wedge((v1\_funct\_2 \\ X1 (u1\_struct\_0 X0) (u1\_struct\_0 X0))\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0))))))\Rightarrow(k2\_lattice2 \\ (u1\_struct\_0 X0) X0 (k1\_setwiseo (u1\_struct\_0 X0) X1 = k5\_lattices \\ X0))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.(l3\_lattices X0)\Rightarrow((l1\_lattices X0)\wedge(l2\_lattices X0)) \quad (10)$$

Assume the following.

$$\forall X0.(l1\_lattices X0)\Rightarrow(l1\_struct\_0 X0) \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_struct\_0 X0)\Rightarrow((v1\_funct\_1 (k3\_struct\_0 X0))\wedge \\ ((v1\_funct\_2 (k3\_struct\_0 X0) (u1\_struct\_0 X0) (u1\_struct\_0 X0))\wedge \\ (m1\_subset\_1 (k3\_struct\_0 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\ X0) (u1\_struct\_0 X0)))))) \end{aligned} \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X1 X0))\Rightarrow(m1\_subset\_1 (k2\_setwiseo X0 X1) (k5\_finsub\_1 X0)) \quad (13)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 (k1\_setwise0 X0) \wedge (m1\_subset\_1 (k1\_setwise0 X0) (k5\_finsub\_1 X0))) \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k5\_finsub\_1 (u1\_struct\_0 X0))) \Rightarrow (k1\_lattice4 X0 X1 = k2\_lattice2 (u1\_struct\_0 X0) X0 X1 (k3\_struct\_0 X0))) \\ & \hspace{15em} (15) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow ((v21\_lattices X1 X0) \Leftrightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (((X2 \in X1) \wedge (X3 \in X1)) \Rightarrow (k3\_lattices X0 X2 X3 \in X1))))) \\ & \hspace{15em} (16) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.k2\_xboole\_0 X0 X1 = k2\_xboole\_0 X1 X0 \quad (17)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge ((v13\_lattices X0) \wedge (l3\_lattices X0)))) \Rightarrow (\forall X1.((v20\_lattices X1 X0) \wedge (v21\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \Rightarrow ((k5\_lattices X0 \in X1) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k5\_finsub\_1 (u1\_struct\_0 X0)) \Rightarrow ((r1\_tarski X2 X1) \Rightarrow (k1\_lattice4 X0 X2 \in X1))))) \\ & \hspace{15em} \end{aligned}$$