

# t31\_lattice2 (TMWZMG- JAiTJ2FY518xNkh33T6v5tQhSUphG)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k5\_finsub\_1 : \iota \Rightarrow \iota$  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  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_lattice2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v5\_lattices : \iota \Rightarrow o$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $r1\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v6\_lattices : \iota \Rightarrow o$  be given. Let  $v8\_lattices : \iota \Rightarrow o$  be given. Let  $v9\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $v4\_lattices : \iota \Rightarrow o$  be given. Let  $v7\_lattices : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v5\_lattices X0) \wedge (l2\_lattices \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 \\ & (u1\_struct\_0 X0)) \Rightarrow (((r1\_lattices X0 X1 X2) \wedge (r1\_lattices X0 X2 \\ & X3)) \Rightarrow (r1\_lattices X0 X1 X3)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1. (\neg v1\_xboole\_0 X1) \Rightarrow (\forall X2. (m1\_subset\_1 \\ & X2 X1) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (k5\_finsub\_1 X1)) \Rightarrow (\forall X4. \\ & ((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 \\ & X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X1 (u1\_struct\_0 X0)))))) \Rightarrow ((X2 \in X3) \Rightarrow \\ & (r3\_lattices X0 (k3\_funct\_2 X1 (u1\_struct\_0 X0) X4 X2) (k2\_lattice2 \\ & X1 X0 X3 X4))))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((v6\_lattices \\ & X0) \wedge ((v8\_lattices X0) \wedge ((v9\_lattices X0) \wedge (l3\_lattices X0)))))) \wedge \\ & ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 \\ & X0))) \Rightarrow (r3\_lattices X0 X1 X2) \Leftrightarrow (r1\_lattices X0 X1 X2)) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.(l3\_lattices\ X0)\Rightarrow((l1\_lattices\ X0)\wedge(l2\_lattices\ X0)) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0\ X0)\wedge \\ & (((v1\_funct\_1\ X2)\wedge((v1\_funct\_2\ X2\ X0\ X1)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1\ X0\ X1))))))\wedge(m1\_subset\_1\ X3\ X0)))\Rightarrow(m1\_subset\_1\ ( \\ & k3\_funct\_2\ X0\ X1\ X2\ X3)\ X1) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0\ X0)\wedge \\ & (((\neg v2\_struct\_0\ X1)\wedge((v10\_lattices\ X1)\wedge(l3\_lattices\ X1)))\wedge \\ & ((m1\_subset\_1\ X2\ (k5\_finsub\_1\ X0))\wedge((v1\_funct\_1\ X3)\wedge((v1\_funct\_2 \\ & X3\ X0\ (u1\_struct\_0\ X1))\wedge(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1 \\ & X0\ (u1\_struct\_0\ X1))))))))))\Rightarrow(m1\_subset\_1\ (k2\_lattice2\ X0\ X1\ X2 \\ & X3)\ (u1\_struct\_0\ X1)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l3\_lattices\ X0)\Rightarrow(((\neg v2\_struct\_0\ X0)\wedge(v10\_lattices \\ & X0))\Rightarrow((\neg v2\_struct\_0\ X0)\wedge((v4\_lattices\ X0)\wedge((v5\_lattices\ X0)\wedge \\ & ((v6\_lattices\ X0)\wedge((v7\_lattices\ X0)\wedge((v8\_lattices\ X0)\wedge(v9\_lattices \\ & X0)))))))))) \end{aligned} \quad (7)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v10\_lattices\ X0)\wedge(l3\_lattices \\ & X0)))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2. \\ & (\neg v1\_xboole\_0\ X2)\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (k5\_finsub\_1\ X2))\Rightarrow \\ & (\forall X4.((v1\_funct\_1\ X4)\wedge((v1\_funct\_2\ X4\ X2\ (u1\_struct\_0 \\ & X0))\wedge(m1\_subset\_1\ X4\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ X2\ (u1\_struct\_0 \\ & X0))))))\Rightarrow((r3\_lattices\ X0\ (k2\_lattice2\ X2\ X0\ X3\ X4)\ X1)\Rightarrow(\forall X5. \\ & (m1\_subset\_1\ X5\ X2)\Rightarrow((X5\ \in\ X3)\Rightarrow(r3\_lattices\ X0\ (k3\_funct\_2\ X2\ ( \\ & u1\_struct\_0\ X0)\ X4\ X5)\ X1)))))))))) \end{aligned}$$