

## t47\_lattice2

(TMWwG64Xx9hksCDcDAqbD6kE163BxLrjYNL)

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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  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $u1\_struct\_0 : \iota \Rightarrow \iota$  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  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k3\_lattice2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\
 & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
 & (\neg v1\_xboole\_0 X2) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (k5\_finsub\_1 X2)) \Rightarrow \\
 & (\forall X4.((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 X2 (u1\_struct\_0 \\
 & X0)) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X2 (u1\_struct\_0 \\
 & X0)))))) \Rightarrow ((\forall X5.(m1\_subset\_1 X5 X2) \Rightarrow ((X5 \in X3) \Rightarrow (r3\_lattices \\
 & X0 X1 (k3\_funct\_2 X2 (u1\_struct\_0 X0) X4 X5)))) \Rightarrow ((X3 = k1\_xboole\_0) \vee \\
 & (r3\_lattices X0 X1 (k3\_lattice2 X2 X0 X3 X4)))))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\
 & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
 & (\neg v1\_xboole\_0 X2) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (k5\_finsub\_1 X2)) \Rightarrow \\
 & (\forall X4.((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 X2 (u1\_struct\_0 \\
 & X0)) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X2 (u1\_struct\_0 \\
 & X0)))))) \Rightarrow ((\exists X5.(m1\_subset\_1 X5 X2) \wedge ((X5 \in X3) \wedge (r3\_lattices \\
 & X0 (k3\_funct\_2 X2 (u1\_struct\_0 X0) X4 X5) X1))) \Rightarrow (r3\_lattices X0 \\
 & (k3\_lattice2 X2 X0 X3 X4) X1))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0)\wedge \\
& ((\neg v2\_struct\_0 X1)\wedge((v10\_lattices X1)\wedge(l3\_lattices X1)))\wedge \\
& ((m1\_subset\_1 X2 (k5\_finsub\_1 X0))\wedge((v1\_funct\_1 X3)\wedge((v1\_funct\_2 \\
& X3 X0 (u1\_struct\_0 X1))\wedge(m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 (u1\_struct\_0 X1))))))\Rightarrow(m1\_subset\_1 (k3\_lattice2 X0 X1 X2 \\
& X3) (u1\_struct\_0 X1))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0)\wedge \\
& (((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 X0 X1)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 X0 X1))))\wedge(m1\_subset\_1 X3 X0)))\Rightarrow(m1\_subset\_1 ( \\
& k3\_funct\_2 X0 X1 X2 X3) X1)
\end{aligned} \tag{4}$$

**Theorem 1**

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