

t49_lattice3 (TMRmXTAS- dgXkd8AmvJ3H7486ZxXPggdn2wG)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v10_lattices : \iota \Rightarrow o$ be given. Let $v4_lattice3 : \iota \Rightarrow o$ be given. Let $l3_lattices : \iota \Rightarrow o$ be given. Let $v13_lattices : \iota \Rightarrow o$ be given. Let $k5_lattices : \iota \Rightarrow \iota$ be given. Let $k15_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $v4_lattices : \iota \Rightarrow o$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r1_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v6_lattices : \iota \Rightarrow o$ be given. Let $v8_lattices : \iota \Rightarrow o$ be given. Let $k4_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $k2_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r4_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v5_lattices : \iota \Rightarrow o$ be given. Let $v7_lattices : \iota \Rightarrow o$ be given. Let $v9_lattices : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v4_lattices X0) \wedge (l2_lattices \\ & X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (((r1_lattices X0 X1 X2) \wedge (r1_lattices \\ & X0 X2 X1)) \Rightarrow (X1 = X2)))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. \neg (X0 \in X1) \wedge (v1_xboole_0 X1) \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v6_lattices X0) \wedge ((v8_lattices \\ & X0) \wedge (l3_lattices X0)))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (r1_lattices \\ & X0 (k4_lattices X0 X1 X2) X1))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v6_lattices \\ & X0) \wedge (l1_lattices X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge \\ & m1_subset_1 X2 (u1_struct_0 X0))) \Rightarrow (k4_lattices X0 X1 X2 = k2_lattices \\ & X0 X1 X2) \end{aligned} \tag{4}$$

Assume the following.

$$v1_xboole_0 \ k1_xboole_0 \quad (5)$$

Assume the following.

$$\forall X0.(l3_lattices \ X0) \Rightarrow ((l1_lattices \ X0) \wedge (l2_lattices \ X0)) \quad (6)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 \ X0) \wedge (l1_lattices \ X0)) \Rightarrow (m1_subset_1 \ (k5_lattices \ X0) \ (u1_struct_0 \ X0)) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 \ X0) \wedge (v6_lattices \ X0) \wedge (l1_lattices \ X0))) \wedge ((m1_subset_1 \ X1 \ (u1_struct_0 \ X0)) \wedge (m1_subset_1 \ X2 \ (u1_struct_0 \ X0))) \Rightarrow (m1_subset_1 \ (k4_lattices \ X0 \ X1 \ X2) \ (u1_struct_0 \ X0)) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v2_struct_0 \ X0) \wedge (l3_lattices \ X0)) \Rightarrow (m1_subset_1 \ (k15_lattice3 \ X0 \ X1) \ (u1_struct_0 \ X0)) \quad (9)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 \ X0) \wedge (l3_lattices \ X0)) \Rightarrow (((\neg v2_struct_0 \ X0) \wedge ((v10_lattices \ X0) \wedge ((v4_lattice3 \ X0) \wedge (l3_lattices \ X0)))) \Rightarrow (\forall X1.\forall X2.(m1_subset_1 \ X2 \ (u1_struct_0 \ X0)) \Rightarrow ((X2 = k15_lattice3 \ X0 \ X1) \Leftrightarrow ((r4_lattice3 \ X0 \ X2 \ X1) \wedge (\forall X3.(m1_subset_1 \ X3 \ (u1_struct_0 \ X0)) \Rightarrow ((r4_lattice3 \ X0 \ X3 \ X1) \Rightarrow (r1_lattices \ X0 \ X2 \ X3))))))) \quad (10)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 \ X0) \wedge (l3_lattices \ X0)) \Rightarrow (\forall X1.(m1_subset_1 \ X1 \ (u1_struct_0 \ X0)) \Rightarrow (\forall X2.(r4_lattice3 \ X0 \ X1 \ X2) \Leftrightarrow (\forall X3.(m1_subset_1 \ X3 \ (u1_struct_0 \ X0)) \Rightarrow ((X3 \in \ X2) \Rightarrow (r1_lattices \ X0 \ X3 \ X1)))))) \quad (11)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 \ X0) \wedge (l1_lattices \ X0)) \Rightarrow ((v13_lattices \ X0) \Rightarrow (\forall X1.(m1_subset_1 \ X1 \ (u1_struct_0 \ X0)) \Rightarrow ((X1 = k5_lattices \ X0) \Leftrightarrow (\forall X2.(m1_subset_1 \ X2 \ (u1_struct_0 \ X0)) \Rightarrow ((k2_lattices \ X0 \ X1 \ X2 = X1) \wedge (k2_lattices \ X0 \ X2 \ X1 = X1)))))) \quad (12)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 \ X0) \wedge (l1_lattices \ X0)) \Rightarrow ((v13_lattices \ X0) \Leftrightarrow (\exists X1.(m1_subset_1 \ X1 \ (u1_struct_0 \ X0)) \wedge (\forall X2.(m1_subset_1 \ X2 \ (u1_struct_0 \ X0)) \Rightarrow ((k2_lattices \ X0 \ X1 \ X2 = X1) \wedge (k2_lattices \ X0 \ X2 \ X1 = X1)))))) \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (&((\neg v2_struct_0 X0) \wedge (v6_lattices \\ X0) \wedge (l1_lattices X0))) \wedge (&(m1_subset_1 X1 (u1_struct_0 X0)) \wedge (\\ m1_subset_1 X2 (u1_struct_0 X0))) \Rightarrow (&k4_lattices X0 X1 X2 = k4_lattices \\ X0 X2 X1) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0. (l3_lattices X0) \Rightarrow (&((\neg v2_struct_0 X0) \wedge (v10_lattices \\ X0)) \Rightarrow (&(\neg v2_struct_0 X0) \wedge (v4_lattices X0) \wedge (v5_lattices X0) \wedge \\ ((v6_lattices X0) \wedge (&(v7_lattices X0) \wedge (v8_lattices X0) \wedge (v9_lattices \\ X0)))))) \end{aligned} \quad (15)$$

Theorem 1

$$\begin{aligned} \forall X0. ((\neg v2_struct_0 X0) \wedge (&(v10_lattices X0) \wedge (v4_lattice3 \\ X0) \wedge (l3_lattices X0))) \Rightarrow (&((\neg v2_struct_0 X0) \wedge (v10_lattices \\ X0) \wedge (&(v13_lattices X0) \wedge (l3_lattices X0))) \wedge (k5_lattices X0 = \\ k15_lattice3 X0 k1_xboole_0)) \end{aligned}$$