

t38_lattice3 (TMK-
iBpu93vgAXY4TmVsKCoi3VMiPwt6VVby)

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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 $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r3_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k15_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k16_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r3_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $r1_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r4_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_lattices : \iota \Rightarrow o$ be given. Let $v5_lattices : \iota \Rightarrow o$ be given. Let $v7_lattices : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge ((v4_lattice3 \\ & X0) \wedge (l3_lattices X0)))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X2.(X1 = k16_lattice3 X0 X2) \Leftrightarrow ((r3_lattice3 X0 X1 \\ & X2) \wedge (\forall X3.(m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow ((r3_lattice3 \\ & X0 X3 X2) \Rightarrow (r3_lattices X0 X3 X1)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0) \wedge ((v6_lattices \\ & X0) \wedge ((v8_lattices X0) \wedge ((v9_lattices X0) \wedge (l3_lattices X0)))) \wedge \\ & ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 \\ & X0)))) \Rightarrow ((r3_lattices X0 X1 X2) \Leftrightarrow (r1_lattices X0 X1 X2)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v2_struct_0 X0) \wedge (l3_lattices X0)) \Rightarrow \\ & (m1_subset_1 (k16_lattice3 X0 X1) (u1_struct_0 X0)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v2_struct_0 X0) \wedge (l3_lattices X0)) \Rightarrow \\ & (m1_subset_1 (k15_lattice3 X0 X1) (u1_struct_0 X0)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge (l3_lattices X0)) \Rightarrow (((\neg v2_struct_0 \\ X0) \wedge ((v10_lattices X0) \wedge ((v4_lattice3 X0) \wedge (l3_lattices X0)))) \Rightarrow \\ (\forall X1. \forall X2. (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow ((X2 = \\ k15_lattice3 X0 X1) \Leftrightarrow ((r4_lattice3 X0 X2 X1) \wedge (\forall X3. (m1_subset_1 \\ X3 (u1_struct_0 X0)) \Rightarrow ((r4_lattice3 X0 X3 X1) \Rightarrow (r1_lattices X0 X2 \\ X3)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge (l3_lattices X0)) \Rightarrow (\forall X1. \\ (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. (r4_lattice3 X0 \\ X1 X2) \Leftrightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow ((X3 \in X2) \Rightarrow \\ (r1_lattices X0 X3 X1)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge (l3_lattices X0)) \Rightarrow (\forall X1. \\ (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. (r3_lattice3 X0 \\ X1 X2) \Leftrightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow ((X3 \in X2) \Rightarrow \\ (r1_lattices X0 X1 X3)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0. (l3_lattices X0) \Rightarrow (((\neg v2_struct_0 X0) \wedge (v10_lattices \\ X0)) \Rightarrow ((\neg v2_struct_0 X0) \wedge ((v4_lattices X0) \wedge ((v5_lattices X0) \wedge \\ ((v6_lattices X0) \wedge ((v7_lattices X0) \wedge ((v8_lattices X0) \wedge (v9_lattices \\ X0)))))))) \end{aligned} \quad (8)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge ((v4_lattice3 \\ X0) \wedge (l3_lattices X0)))) \Rightarrow (\forall X1. (m1_subset_1 X1 (u1_struct_0 \\ X0)) \Rightarrow (\forall X2. (X1 \in X2) \Rightarrow ((r3_lattices X0 X1 (k15_lattice3 X0 \\ X2)) \wedge (r3_lattices X0 (k16_lattice3 X0 X2) X1)))) \end{aligned}$$