

t32_lattice3

(TMc9CXzdBskwyQa2osHVWoxbYZkgMkTTAVZ)

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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 $k4_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v7_lattices : \iota \Rightarrow o$ 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 $k2_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v6_lattices : \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $l2_lattices : \iota \Rightarrow o$ 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. Assume the following.

$$\begin{aligned} \forall X0. (&(\neg v2_struct_0 X0) \wedge ((v7_lattices X0) \wedge ((v8_lattices \\ &X0) \wedge ((v9_lattices X0) \wedge (l3_lattices X0)))))) \Rightarrow (\forall X1. (m1_subset_1 \\ &X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. (m1_subset_1 X2 (u1_struct_0 \\ &X0)) \Rightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow ((r1_lattices \\ &X0 X1 X2) \Rightarrow (r1_lattices X0 (k2_lattices X0 X1 X3) (k2_lattices X0 \\ &X2 X3))))))) \end{aligned} \tag{1}$$

Assume the following.

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

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (&((\neg v2_struct_0 X0) \wedge ((v6_lattices \\ &X0) \wedge (l1_lattices X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (\\ &m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow (k4_lattices X0 X1 X2 = k2_lattices \\ &X0 X1 X2) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0. (l3_lattices X0) \Rightarrow ((l1_lattices X0) \wedge (l2_lattices X0)) \tag{4}$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge(v6_lattices \\ X0)\wedge(l1_lattices X0)))\wedge((m1_subset_1 X1 (u1_struct_0 X0))\wedge(\\ m1_subset_1 X2 (u1_struct_0 X0)))\Rightarrow(m1_subset_1 (k4_lattices \\ X0 X1 X2) (u1_struct_0 X0)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v2_struct_0 X0)\wedge(l3_lattices X0))\Rightarrow \\ (m1_subset_1 (k15_lattice3 X0 X1) (u1_struct_0 X0)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0)\wedge(l3_lattices X0))\Rightarrow(((\neg v2_struct_0 \\ X0)\wedge(v10_lattices X0)\wedge(v4_lattice3 X0)\wedge(l3_lattices X0)))\Rightarrow \\ (\forall X1.\forall X2.(m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow((X2 = \\ k15_lattice3 X0 X1)\Leftrightarrow((r4_lattice3 X0 X2 X1)\wedge(\forall X3.(m1_subset_1 \\ X3 (u1_struct_0 X0))\Rightarrow((r4_lattice3 X0 X3 X1)\Rightarrow(r1_lattices X0 X2 \\ X3)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0)\wedge(l3_lattices X0))\Rightarrow(\forall X1. \\ (m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(\forall X2.(r4_lattice3 X0 \\ X1 X2)\Leftrightarrow(\forall X3.(m1_subset_1 X3 (u1_struct_0 X0))\Rightarrow((X3 \in X2)\Rightarrow \\ (r1_lattices X0 X3 X1)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge(v6_lattices \\ X0)\wedge(l1_lattices X0)))\wedge((m1_subset_1 X1 (u1_struct_0 X0))\wedge(\\ m1_subset_1 X2 (u1_struct_0 X0)))\Rightarrow(k4_lattices X0 X1 X2 = k4_lattices \\ X0 X2 X1) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3_lattices X0)\Rightarrow(((\neg v2_struct_0 X0)\wedge(v10_lattices \\ X0))\Rightarrow((\neg v2_struct_0 X0)\wedge(v4_lattices X0)\wedge(v5_lattices X0)\wedge \\ ((v6_lattices X0)\wedge(v7_lattices X0)\wedge(v8_lattices X0)\wedge(v9_lattices \\ X0)))))) \end{aligned} \quad (10)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0)\wedge(v10_lattices X0)\wedge(v4_lattice3 \\ X0)\wedge(l3_lattices X0)))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ X0))\Rightarrow(\forall X2.r3_lattices X0 (k15_lattice3 X0 (ReplSep (toset \\ (\lambda X3 : \iota.m1_subset_1 X3 (u1_struct_0 X0))) (\lambda X3 : \iota.X3 \in \\ X2) (\lambda X3 : \iota.k4_lattices X0 X1 X3))) (k4_lattices X0 X1 (k15_lattice3 \\ X0 X2)))))) \end{aligned}$$