

t9_lattice4

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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 $k1_lattice4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_setwiseo : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_relat_1 : \iota \Rightarrow \iota$ 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 $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $v1_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7_setwiseo : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_partfun1 : \iota \Rightarrow \iota$ be given. Let $v5_lattices : \iota \Rightarrow o$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $u2_lattices : \iota \Rightarrow \iota$ be given. Let $v4_lattices : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v3_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $k3_struct_0 : \iota \Rightarrow \iota$ be given. Let $k5_finsub_1 : \iota \Rightarrow \iota$ be given. Let $k2_lattice2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v6_lattices : \iota \Rightarrow o$ 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. Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (k1_funct_1 (k4_relat_1 X1) X0 = X0) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. (\neg v1_xboole_0 X1) \Rightarrow \\ & (\forall X2. ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 \\ & X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\ & X0 X0) X0)))))) \Rightarrow (\forall X3. ((v1_funct_1 X3) \wedge ((v1_funct_2 X3 X1 \\ & X0) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0)))))) \Rightarrow (((\\ & v1_binop_1 X2 X0) \wedge (v2_binop_1 X2 X0)) \Rightarrow (\forall X4. (m1_subset_1 \\ & X4 X1) \Rightarrow (k7_setwiseo X1 X0 X2 (k2_setwiseo X1 X4) X3 = k3_funct_2 X1 \\ & X0 X3 X4)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0. k6_partfun1\ X0 = k4_relat_1\ X0 \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((\neg v1_xboole_0\ X0) \wedge \\ & (((v1_funct_1\ X2) \wedge ((v1_funct_2\ X2\ X0\ X1) \wedge (m1_subset_1\ X2\ (k1_zfmisc_1 \\ & (k2_zfmisc_1\ X0\ X1)))))) \wedge (m1_subset_1\ X3\ X0))) \Rightarrow (k3_funct_2\ X0 \\ & X1\ X2\ X3 = k1_funct_1\ X2\ X3) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0\ X0) \wedge ((v5_lattices\ X0) \wedge (l2_lattices \\ & X0))) \Rightarrow ((v1_funct_1\ (u2_lattices\ X0)) \wedge ((v1_funct_2\ (u2_lattices \\ & X0)\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (u1_struct_0\ X0))\ (u1_struct_0 \\ & X0)) \wedge (v2_binop_1\ (u2_lattices\ X0)\ (u1_struct_0\ X0)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0\ X0) \wedge ((v4_lattices\ X0) \wedge (l2_lattices \\ & X0))) \Rightarrow ((v1_funct_1\ (u2_lattices\ X0)) \wedge ((v1_funct_2\ (u2_lattices \\ & X0)\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (u1_struct_0\ X0))\ (u1_struct_0 \\ & X0)) \wedge (v1_binop_1\ (u2_lattices\ X0)\ (u1_struct_0\ X0)))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0\ X0) \wedge (l1_struct_0\ X0)) \Rightarrow (\neg v1_xboole_0\ (u1_struct_0\ X0)) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0\ X0) \wedge ((v10_lattices\ X0) \wedge (l3_lattices \\ & X0))) \Rightarrow ((v1_funct_1\ (u2_lattices\ X0)) \wedge ((v1_funct_2\ (u2_lattices \\ & X0)\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (u1_struct_0\ X0))\ (u1_struct_0 \\ & X0)) \wedge (v3_binop_1\ (u2_lattices\ X0)\ (u1_struct_0\ X0)))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0. (l2_lattices\ X0) \Rightarrow ((v1_funct_1\ (u2_lattices\ X0)) \wedge \\ & ((v1_funct_2\ (u2_lattices\ X0)\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (\\ & u1_struct_0\ X0))\ (u1_struct_0\ X0)) \wedge (m1_subset_1\ (u2_lattices \\ & X0)\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (\\ & u1_struct_0\ X0))\ (u1_struct_0\ X0)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0. (l3_lattices\ X0) \Rightarrow ((l1_lattices\ X0) \wedge (l2_lattices\ X0)) \quad (11)$$

Assume the following.

$$\forall X0.(l1_lattices\ X0)\Rightarrow(l1_struct_0\ X0) \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1_struct_0\ X0)\Rightarrow&((v1_funct_1\ (k3_struct_0\ X0))\wedge \\ &((v1_funct_2\ (k3_struct_0\ X0)\ (u1_struct_0\ X0)\ (u1_struct_0\ X0))\wedge \\ &(m1_subset_1\ (k3_struct_0\ X0)\ (k1_zfmisc_1\ (k2_zfmisc_1\ (u1_struct_0\ X0) \\ &\quad X0)\ (u1_struct_0\ X0)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1_xboole_0\ X0)\wedge(m1_subset_1\ X1\ X0))\Rightarrow \\ (m1_subset_1\ (k2_setwiseo\ X0\ X1)\ (k5_finsub_1\ X0)) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0\ X0)\wedge((v10_lattices\ X0)\wedge(l3_lattices \\ X0)))\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k5_finsub_1\ (u1_struct_0 \\ X0)))\Rightarrow(k1_lattice4\ X0\ X1 = k2_lattice2\ (u1_struct_0\ X0)\ X0\ X1\ (k3_struct_0 \\ X0))) \end{aligned} \quad (15)$$

Assume the following.

$$\forall X0.(l1_struct_0\ X0)\Rightarrow(k3_struct_0\ X0 = k6_partfun1\ (u1_struct_0\ X0)) \quad (16)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0\ X0)\Rightarrow(\forall X1.((\neg v2_struct_0\ X1)\wedge \\ ((v10_lattices\ X1)\wedge(l3_lattices\ X1)))\Rightarrow(\forall X2.(m1_subset_1 \\ X2\ (k5_finsub_1\ X0))\Rightarrow(\forall X3.((v1_funct_1\ X3)\wedge((v1_funct_2 \\ X3\ X0\ (u1_struct_0\ X1))\wedge(m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ X0\ (u1_struct_0\ X1))))))\Rightarrow(k2_lattice2\ X0\ X1\ X2\ X3 = k7_setwiseo \\ X0\ (u1_struct_0\ X1)\ (u2_lattices\ X1)\ X2\ X3)))))) \end{aligned} \quad (17)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3_lattices\ X0)\Rightarrow(((\neg v2_struct_0\ X0)\wedge(v10_lattices \\ X0))\Rightarrow((\neg v2_struct_0\ X0)\wedge((v4_lattices\ X0)\wedge((v5_lattices\ X0)\wedge \\ ((v6_lattices\ X0)\wedge((v7_lattices\ X0)\wedge((v8_lattices\ X0)\wedge(v9_lattices \\ X0)))))))))) \end{aligned} \quad (18)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0\ X0)\wedge((v10_lattices\ X0)\wedge(l3_lattices \\ X0)))\Rightarrow(\forall X1.(m1_subset_1\ X1\ (u1_struct_0\ X0))\Rightarrow(k1_lattice4 \\ X0\ (k2_setwiseo\ (u1_struct_0\ X0)\ X1) = X1)) \end{aligned}$$