

t43_lattice2 (TM- bqW9MXHyqdbYVjMMypYCy1gH4s5WPbaf3)

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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 $v1_xboole_0 : \iota \Rightarrow o$ 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 $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k4_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_lattice2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_lattices : \iota \Rightarrow \iota$ be given. Let $v3_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $r6_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_setwiseo : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v6_lattices : \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $k2_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v7_lattices : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $v4_lattices : \iota \Rightarrow o$ be given. Let $v5_lattices : \iota \Rightarrow o$ be given. Let $v8_lattices : \iota \Rightarrow o$ be given. Let $v9_lattices : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
& \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. (\neg v1_xboole_0 X1) \Rightarrow \\
& (\forall X2. ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 \\
& X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\
& X0 X0) X0)))) \Rightarrow (\forall X3. ((v1_funct_1 X3) \wedge ((v1_funct_2 X3 (\\
& k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (k2_zfmisc_1 X0 X0) X0)))) \Rightarrow (((v3_binop_1 X2 X0) \wedge ((v1_binop_1 \\
& X2 X0) \wedge ((v2_binop_1 X2 X0) \wedge (r6_binop_1 X0 X3 X2)))) \Rightarrow (\forall X4. \\
& (m1_subset_1 X4 (k5_finsub_1 X1)) \Rightarrow ((X4 \neq k1_xboole_0) \Rightarrow (\forall X5. \\
& ((v1_funct_1 X5) \wedge ((v1_funct_2 X5 X1 X0) \wedge (m1_subset_1 X5 (k1_zfmisc_1 \\
& (k2_zfmisc_1 X1 X0)))) \Rightarrow (\forall X6. (m1_subset_1 X6 X0) \Rightarrow (k5_binop_1 \\
& X0 X3 X6 (k7_setwiseo X1 X0 X2 X4 X5) = k7_setwiseo X1 X0 X2 X4 (k10_funcop_1 \\
& X0 X1 X3 X6 X5))))))))))
\end{aligned}$$

(1)

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices X0))) \Rightarrow (r6_binop_1 (u1_struct_0 X0) (u1_lattices X0) (u1_lattices X0)) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v6_lattices X0) \wedge (l1_lattices X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow (k4_lattices X0 X1 X2 = k2_lattices X0 X1 X2) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. \forall X4. ((\neg v1_xboole_0 X0) \wedge (((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))) \wedge ((m1_subset_1 X3 X0) \wedge ((v1_funct_1 X4) \wedge ((v1_funct_2 X4 X1 X0) \wedge (m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0)))))))))) \Rightarrow (k10_funcop_1 X0 X1 X2 X3 X4 = k5_funcop_1 X2 X3 X4) \quad (4)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 X0) \wedge ((v7_lattices X0) \wedge (l1_lattices X0))) \Rightarrow ((v1_funct_1 (u1_lattices X0)) \wedge ((v1_funct_2 (u1_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 X0)) \wedge (v2_binop_1 (u1_lattices X0) (u1_struct_0 X0)))) \quad (5)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 X0) \wedge ((v6_lattices X0) \wedge (l1_lattices X0))) \Rightarrow ((v1_funct_1 (u1_lattices X0)) \wedge ((v1_funct_2 (u1_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 X0)) \wedge (v1_binop_1 (u1_lattices X0) (u1_struct_0 X0)))) \quad (6)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices X0))) \Rightarrow ((v1_funct_1 (u1_lattices X0)) \wedge ((v1_funct_2 (u1_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 X0)) \wedge (v3_binop_1 (u1_lattices X0) (u1_struct_0 X0)))) \quad (7)$$

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.

$$\begin{aligned} \forall X0.(l1_lattices\ X0) \Rightarrow & ((v1_funct_1\ (u1_lattices\ X0)) \wedge \\ & ((v1_funct_2\ (u1_lattices\ X0)\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (\\ & u1_struct_0\ X0))\ (u1_struct_0\ X0)) \wedge (m1_subset_1\ (u1_lattices \\ & X0)\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k2_zfmisc_1\ (u1_struct_0\ X0)\ (\\ & u1_struct_0\ X0))\ (u1_struct_0\ X0)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.(l3_lattices\ X0) \Rightarrow ((l1_lattices\ X0) \wedge (l2_lattices\ X0)) \quad (10)$$

Assume the following.

$$\forall X0.(l2_lattices\ X0) \Rightarrow (l1_struct_0\ X0) \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_xboole_0\ X0) \wedge \\ & (((\neg v2_struct_0\ X1) \wedge ((v10_lattices\ X1) \wedge (l3_lattices\ X1))) \wedge \\ & ((m1_subset_1\ X2\ (k5_finsub_1\ X0)) \wedge ((v1_funct_1\ X3) \wedge ((v1_funct_2 \\ & X3\ X0\ (u1_struct_0\ X1)) \wedge (m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ & X0\ (u1_struct_0\ X1)))))))))) \Rightarrow (m1_subset_1\ (k3_lattice2\ X0\ X1\ X2 \\ & X3)\ (u1_struct_0\ X1)) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 \\ & X0) \wedge (((v1_funct_1\ X2) \wedge ((v1_funct_2\ X2\ (k2_zfmisc_1\ X0\ X0)\ X0) \wedge \\ & (m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k2_zfmisc_1\ X0\ X0) \\ & X0)))))) \wedge ((m1_subset_1\ X3\ X0) \wedge ((v1_funct_1\ X4) \wedge ((v1_funct_2 \\ & X4\ X1\ X0) \wedge (m1_subset_1\ X4\ (k1_zfmisc_1\ (k2_zfmisc_1\ X1\ X0))))))) \Rightarrow \\ & ((v1_funct_1\ (k10_funcop_1\ X0\ X1\ X2\ X3\ X4)) \wedge ((v1_funct_2\ (k10_funcop_1 \\ & X0\ X1\ X2\ X3\ X4)\ X1\ X0) \wedge (m1_subset_1\ (k10_funcop_1\ X0\ X1\ X2\ X3\ X4)\ (k1_zfmisc_1 \\ & (k2_zfmisc_1\ X1\ X0)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0\ X0) \Rightarrow & (\forall X1.((\neg v2_struct_0\ X1) \wedge \\ & ((v10_lattices\ X1) \wedge (l3_lattices\ X1))) \Rightarrow (\forall X2.(m1_subset_1 \\ & X2\ (k5_finsub_1\ X0)) \Rightarrow (\forall X3.((v1_funct_1\ X3) \wedge ((v1_funct_2 \\ & X3\ X0\ (u1_struct_0\ X1)) \wedge (m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1 \\ & X0\ (u1_struct_0\ X1)))))) \Rightarrow (k3_lattice2\ X0\ X1\ X2\ X3 = k7_setwiseo \\ & X0\ (u1_struct_0\ X1)\ (u1_lattices\ X1)\ X2\ X3)))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0\ X0) \wedge (l1_lattices\ X0)) \Rightarrow & (\forall X1. \\ & (m1_subset_1\ X1\ (u1_struct_0\ X0)) \Rightarrow (\forall X2.(m1_subset_1\ X2 \\ & (u1_struct_0\ X0)) \Rightarrow (k2_lattices\ X0\ X1\ X2 = k5_binop_1\ (u1_struct_0 \\ & X0)\ (u1_lattices\ X0)\ X1\ X2))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0. (l3_lattices\ X0) \Rightarrow & (((\neg v2_struct_0\ X0) \wedge (v10_lattices \\ X0)) \Rightarrow & ((\neg v2_struct_0\ X0) \wedge ((v4_lattices\ X0) \wedge ((v5_lattices\ X0) \wedge \\ ((v6_lattices\ X0) \wedge & ((v7_lattices\ X0) \wedge ((v8_lattices\ X0) \wedge (v9_lattices \\ X0)))))))) & \end{aligned} \quad (16)$$

Theorem 1

$$\begin{aligned} \forall X0. ((\neg v2_struct_0\ X0) \wedge & ((v10_lattices\ X0) \wedge (l3_lattices \\ X0))) \Rightarrow & (\forall X1. (m1_subset_1\ X1\ (u1_struct_0\ X0)) \Rightarrow (\forall X2. \\ (\neg v1_xboole_0\ X2) \Rightarrow & (\forall X3. (m1_subset_1\ X3\ (k5_finsub_1\ X2)) \Rightarrow \\ (\forall X4. ((v1_funct_1\ X4) \wedge & ((v1_funct_2\ X4\ X2\ (u1_struct_0 \\ X0)) \wedge (m1_subset_1\ X4\ & (k1_zfmisc_1\ (k2_zfmisc_1\ X2\ (u1_struct_0 \\ X0)))))) \Rightarrow & ((X3 \neq k1_xboole_0) \Rightarrow (k4_lattices\ X0\ X1\ (k3_lattice2 \\ X2\ X0\ X3\ X4) = & k3_lattice2\ X2\ X0\ X3\ (k10_funcop_1\ (u1_struct_0\ X0) \\ X2\ (u1_lattices\ X0)\ & X1\ X4))))))))) \end{aligned}$$