

t11_lattice6 (TM- NgLGPoK47DR71kDTjogV6HwZXiWHgSavc)

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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 $k4_lattice6 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_lattices : \iota \Rightarrow \iota$ be given. Let $v3_waybel_6 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_lattice3 : \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v5_orders_2 : \iota \Rightarrow o$ be given. Let $v1_yellow_0 : \iota \Rightarrow o$ be given. Let $l1_orders_2 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r1_orders_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_yellow_0 : \iota \Rightarrow \iota$ be given. Let $k15_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_yellow_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k16_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_yellow_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_lattice3 : \iota \Rightarrow o$ be given. Let $k13_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v13_lattices : \iota \Rightarrow o$ be given. Let $r3_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $k10_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_orders_2 : \iota \Rightarrow o$ be given. Let $v3_orders_2 : \iota \Rightarrow o$ be given. Let $v4_orders_2 : \iota \Rightarrow o$ be given. Let $v2_lattice3 : \iota \Rightarrow o$ be given. Let $k1_xboole_0 : \iota$ 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 $v15_lattices : \iota \Rightarrow o$ be given. Let $v14_lattices : \iota \Rightarrow o$ 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.

$$\forall X0. \forall X1. \neg (X0 \in X1) \wedge (v1_xboole_0 X1) \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2_struct_0 X0) \wedge ((v5_orders_2 X0) \wedge ((v1_yellow_0 \\ X0) \wedge (l1_orders_2 X0)))) \Rightarrow (\forall X1. (m1_subset_1 X1 (u1_struct_0 \\ X0)) \Rightarrow (r1_orders_2 X0 (k3_yellow_0 X0) X1)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. ((v5_orders_2 X0) \wedge (l1_orders_2 X0)) \Rightarrow (\forall X1. \\ (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. (m1_subset_1 X2 \\ (u1_struct_0 X0)) \Rightarrow (((r1_orders_2 X0 X1 X2) \wedge (r1_orders_2 X0 X2 \\ X1)) \Rightarrow (X1 = X2)))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge ((v4_lattice3 \\ X0) \wedge (l3_lattices X0)))) \Rightarrow (\forall X1.(k15_lattice3 X0 X1 = k1_yellow_0 \\ (k3_lattice3 X0) X1) \wedge (k16_lattice3 X0 X1 = k2_yellow_0 (k3_lattice3 \\ X0) X1)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.((v5_orders_2 X0) \wedge ((v1_lattice3 X0) \wedge (l1_orders_2 \\ X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\ (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\ (u1_struct_0 X0)) \Rightarrow ((X3 = k13_lattice3 X0 X1 X2) \Leftrightarrow ((r1_orders_2 \\ X0 X1 X3) \wedge ((r1_orders_2 X0 X2 X3) \wedge (\forall X4.(m1_subset_1 X4 (\\ u1_struct_0 X0)) \Rightarrow (((r1_orders_2 X0 X1 X4) \wedge (r1_orders_2 X0 X2 X4)) \Rightarrow \\ (r1_orders_2 X0 X3 X4)))))))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge ((v13_lattices \\ X0) \wedge (l3_lattices X0)))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ X0)) \Rightarrow (r3_lattices X0 (k5_lattices X0) X1)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0) \wedge ((v6_lattices \\ X0) \wedge ((v8_lattices X0) \wedge ((v9_lattices X0) \wedge (l3_lattices X0)))) \wedge \\ ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 \\ X0)))) \Rightarrow ((r3_lattices X0 X1 X2) \Leftrightarrow (r1_lattices X0 X1 X2)) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((v5_orders_2 X0) \wedge ((v1_lattice3 \\ X0) \wedge (l1_orders_2 X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (\\ m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow (k13_lattice3 X0 X1 X2 = k10_lattice3 \\ X0 X1 X2) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge ((v13_lattices \\ X0) \wedge (l3_lattices X0)))) \Rightarrow ((v1_orders_2 (k3_lattice3 X0)) \wedge ((\\ v3_orders_2 (k3_lattice3 X0)) \wedge ((v4_orders_2 (k3_lattice3 X0)) \wedge \\ ((v5_orders_2 (k3_lattice3 X0)) \wedge (v1_yellow_0 (k3_lattice3 X0)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices \\ X0))) \Rightarrow ((v1_orders_2 (k3_lattice3 X0)) \wedge ((v3_orders_2 (k3_lattice3 \\ X0)) \wedge ((v4_orders_2 (k3_lattice3 X0)) \wedge ((v5_orders_2 (k3_lattice3 \\ X0)) \wedge ((v1_lattice3 (k3_lattice3 X0)) \wedge (v2_lattice3 (k3_lattice3 \\ X0))))))) \end{aligned} \quad (10)$$

Assume the following.

$$v1_xboole_0 \ k1_xboole_0 \quad (11)$$

Assume the following.

$$\forall X0.(l3_lattices \ X0) \Rightarrow ((l1_lattices \ X0) \wedge (l2_lattices \ X0)) \quad (12)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 \ X0) \wedge (l1_lattices \ X0)) \Rightarrow (m1_subset_1 \ (k5_lattices \ X0) \ (u1_struct_0 \ X0)) \quad (13)$$

Assume the following.

$$\forall X0.(l1_orders_2 \ X0) \Rightarrow (m1_subset_1 \ (k3_yellow_0 \ X0) \ (u1_struct_0 \ X0)) \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 \ X0) \wedge ((v10_lattices \ X0) \wedge (l3_lattices \\ X0))) \Rightarrow ((v1_orders_2 \ (k3_lattice3 \ X0)) \wedge ((v3_orders_2 \ (k3_lattice3 \\ X0)) \wedge ((v4_orders_2 \ (k3_lattice3 \ X0)) \wedge ((v5_orders_2 \ (k3_lattice3 \\ X0)) \wedge (l1_orders_2 \ (k3_lattice3 \ X0)))))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 \ X0) \wedge ((v10_lattices \ X0) \wedge ((v4_lattice3 \\ X0) \wedge (l3_lattices \ X0)))) \Rightarrow (\forall X1.(m1_subset_1 \ X1 \ (u1_struct_0 \\ X0)) \Rightarrow (k4_lattice6 \ X0 \ X1 = k15_lattice3 \ X0 \ (ReplSep \ (toset \ (\lambda X2 : \iota.m1_subset_1 \ X2 \ (u1_struct_0 \ X0))) \ (\lambda X2 : \iota.(r3_lattices \\ X0 \ X2 \ X1) \wedge (X2 \neq X1)) \ (\lambda X2 : \iota.X2)))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 \ X0) \wedge (l1_orders_2 \ X0)) \Rightarrow (\forall X1. \\ (m1_subset_1 \ X1 \ (u1_struct_0 \ X0)) \Rightarrow ((v3_waybel_6 \ X1 \ X0) \Leftrightarrow (\forall X2. \\ (m1_subset_1 \ X2 \ (u1_struct_0 \ X0)) \Rightarrow (\forall X3.(m1_subset_1 \ X3 \\ (u1_struct_0 \ X0)) \Rightarrow (\neg (X1 = k10_lattice3 \ X0 \ X2 \ X3) \wedge ((X2 \neq X1) \wedge (X3 \neq \\ X1))))))) \end{aligned} \quad (17)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 \ X0) \wedge ((v10_lattices \ X0) \wedge (l3_lattices \ X0))) \Rightarrow (\forall X1.(m1_subset_1 \ X1 \ (u1_struct_0 \ X0)) \Rightarrow (k4_lattice3 \ X0 \ X1 = X1)) \quad (18)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 \ X0) \wedge (l3_lattices \ X0)) \Rightarrow (((\neg v2_struct_0 \\ X0) \wedge ((v10_lattices \ X0) \wedge ((v4_lattice3 \ X0) \wedge (l3_lattices \ X0)))) \Rightarrow \\ (\forall X1.\forall X2.(m1_subset_1 \ X2 \ (u1_struct_0 \ X0)) \Rightarrow ((X2 = \\ k15_lattice3 \ X0 \ X1) \Leftrightarrow ((r4_lattice3 \ X0 \ X2 \ X1) \wedge (\forall X3.(m1_subset_1 \\ X3 \ (u1_struct_0 \ X0)) \Rightarrow ((r4_lattice3 \ X0 \ X3 \ X1) \Rightarrow (r1_lattices \ X0 \ X2 \\ X3)))))) \end{aligned} \quad (19)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge (l3_lattices X0)) \Rightarrow (\forall X1. \\ (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(r4_lattice3 X0 \\ X1 X2) \Leftrightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow ((X3 \in X2) \Rightarrow \\ (r1_lattices X0 X3 X1)))))) \end{aligned} \quad (20)$$

Assume the following.

$$\forall X0.(l1_orders_2 X0) \Rightarrow (k3_yellow_0 X0 = k1_yellow_0 X0 \ k1_xboole_0) \quad (21)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3_lattices X0) \Rightarrow (((\neg v2_struct_0 X0) \wedge (v15_lattices \\ X0)) \Rightarrow ((\neg v2_struct_0 X0) \wedge ((v13_lattices X0) \wedge (v14_lattices X0)))) \end{aligned} \quad (22)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3_lattices X0) \Rightarrow (((\neg v2_struct_0 X0) \wedge (v10_lattices \\ X0)) \Rightarrow ((\neg v2_struct_0 X0) \wedge ((v4_lattices X0) \wedge ((v5_lattices X0) \wedge \\ ((v6_lattices X0) \wedge ((v7_lattices X0) \wedge ((v8_lattices X0) \wedge (v9_lattices \\ X0)))))))))) \end{aligned} \quad (23)$$

Assume the following.

$$\forall X0.(l1_orders_2 X0) \Rightarrow ((v1_lattice3 X0) \Rightarrow (\neg v2_struct_0 X0)) \quad (24)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3_lattices X0) \Rightarrow (((\neg v2_struct_0 X0) \wedge ((v10_lattices \\ X0) \wedge (v4_lattice3 X0))) \Rightarrow ((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge \\ (v15_lattices X0)))) \end{aligned} \quad (25)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge ((v4_lattice3 \\ X0) \wedge (l3_lattices X0)))) \Rightarrow ((k4_lattice6 X0 (k5_lattices X0) = k5_lattices \\ X0) \wedge (v3_waybel_6 (k4_lattice3 X0 (k5_lattices X0)) (k3_lattice3 \\ X0))) \end{aligned}$$