

t8_lattice5

(TMFSEfdFiXvkEdKzHdE2jqjuU46WDdqhbqo)

October 27, 2020

Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_lattice5 : \iota \Rightarrow \iota$ be given. Let $k12_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. 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 $k3_lattice3 : \iota \Rightarrow \iota$ be given. Let $k4_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k2_msualg_5 : \iota \Rightarrow \iota$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v3_relat_2 : \iota \Rightarrow o$ be given. Let $v8_relat_2 : \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k4_eqrel_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $u1_lattices : \iota \Rightarrow \iota$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $v3_lattices : \iota \Rightarrow o$ be given. Let $u2_lattices : \iota \Rightarrow \iota$ be given. Let $k5_eqrel_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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. Let $v8_lattices : \iota \Rightarrow o$ be given. Let $v9_lattices : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices \\ & \quad X0))) \Rightarrow (\forall X1. (m1_subset_1 X1 (u1_struct_0 (k3_lattice3 \\ & \quad X0))) \Rightarrow (\forall X2. (m1_subset_1 X2 (u1_struct_0 (k3_lattice3 \\ & \quad X0))) \Rightarrow (k12_lattice3 (k3_lattice3 X0) X1 X2 = k4_lattices X0 (k5_lattice3 \\ & \quad X0 X1) (k5_lattice3 X0 X2)))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (X0 \in u1_struct_0 (k2_msualg_5 X1)) \Leftrightarrow ((v1_partfun1 \\ & \quad X0 X1) \wedge ((v3_relat_2 X0) \wedge ((v8_relat_2 X0) \wedge (m1_subset_1 X0 (k1_zfmisc_1 \\ & \quad (k2_zfmisc_1 X1 X1)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1_funct_1 X1)\wedge \\ & ((v1_funct_2 X1 (k2_zfmisc_1 X0 X0) X0)\wedge(m1_subset_1 X1 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))))\wedge((m1_subset_1 X2 X0)\wedge \\ & (m1_subset_1 X3 X0)))\Rightarrow(k5_binop_1 X0 X1 X2 X3 = k1_binop_1 X1 X2 X3) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge((v6_lattices \\ & X0)\wedge(l1_lattices X0)))\wedge((m1_subset_1 X1 (u1_struct_0 X0))\wedge(\\ & m1_subset_1 X2 (u1_struct_0 X0))))\Rightarrow(k4_lattices X0 X1 X2 = k2_lattices \\ & X0 X1 X2) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v3_relat_2 X1)\wedge((v8_relat_2 \\ & X1)\wedge((v1_partfun1 X1 X0)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X0 X0))))))\wedge((v3_relat_2 X2)\wedge((v8_relat_2 X2)\wedge((v1_partfun1 \\ & X2 X0)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 X0 X0)))))))\Rightarrow \\ & (k4_eqrel_1 X0 X1 X2 = k3_xboole_0 X1 X2) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge(l1_struct_0 X0))\Rightarrow(\neg v1_xboole_0 (u1_struct_0 X0)) \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_lattices X0)\Rightarrow((v1_funct_1 (u1_lattices X0))\wedge \\ & ((v1_funct_2 (u1_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (\\ & u1_struct_0 X0)) (u1_struct_0 X0))\wedge(m1_subset_1 (u1_lattices \\ & X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (\\ & u1_struct_0 X0)) (u1_struct_0 X0)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.(l3_lattices X0)\Rightarrow((l1_lattices X0)\wedge(l2_lattices X0)) \quad (9)$$

Assume the following.

$$\forall X0.(l1_lattices X0)\Rightarrow(l1_struct_0 X0) \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v10_lattices X0)\wedge \\ & (l3_lattices X0)))\wedge(m1_subset_1 X1 (u1_struct_0 (k3_lattice3 \\ & X0))))\Rightarrow(m1_subset_1 (k5_lattice3 X0 X1) (u1_struct_0 X0)) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.(\neg v2_struct_0 (k2_msualg_5 X0)) \wedge ((v3_lattices (k2_msualg_5 X0)) \wedge ((v10_lattices (k2_msualg_5 X0)) \wedge (l3_lattices (k2_msualg_5 X0)))) \quad (12)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 (k3_lattice3 X0))) \Rightarrow (k5_lattice3 X0 X1 = X1)) \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v2_struct_0 X1) \wedge ((v3_lattices X1) \wedge \\ & ((v10_lattices X1) \wedge (l3_lattices X1)))) \Rightarrow ((X1 = k2_msualg_5 X0) \Leftrightarrow \\ & ((u1_struct_0 X1 = \text{ReplSep} (\text{toset} (\lambda X2 : \iota. m1_subset_1 X2 (\\ & k1_zfmisc_1 (k2_zfmisc_1 X0 X0)))) (\lambda X2 : \iota. (v1_partfun1 \\ & X2 X0) \wedge ((v3_relat_2 X2) \wedge ((v8_relat_2 X2) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0)))))) (\lambda X2 : \iota. X2)) \wedge (\forall X2. ((v1_partfun1 \\ & X2 X0) \wedge ((v3_relat_2 X2) \wedge ((v8_relat_2 X2) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0)))))) \Rightarrow (\forall X3. ((v1_partfun1 X3 X0) \wedge ((\\ & v3_relat_2 X3) \wedge ((v8_relat_2 X3) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0)))))) \Rightarrow ((k1_binop_1 (u1_lattices X1) X2 X3 = \\ & k4_eqrel_1 X0 X2 X3) \wedge (k1_binop_1 (u2_lattices X1) X2 X3 = k5_eqrel_1 \\ & X0 X2 X3)))))) \end{aligned} \quad (14)$$

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.

$$\forall X0. k1_lattice5 X0 = k3_lattice3 (k2_msualg_5 X0) \quad (16)$$

Assume the following.

$$\forall X0. (l3_lattices X0) \Rightarrow (((\neg v2_struct_0 X0) \wedge (v10_lattices X0)) \Rightarrow ((\neg v2_struct_0 X0) \wedge ((v4_lattices X0) \wedge ((v5_lattices X0) \wedge ((v6_lattices X0) \wedge ((v7_lattices X0) \wedge ((v8_lattices X0) \wedge (v9_lattices X0)))))))) \quad (17)$$

Theorem 1

$$\forall X0. \forall X1. (m1_subset_1 X1 (u1_struct_0 (k1_lattice5 X0))) \Rightarrow (\forall X2. (m1_subset_1 X2 (u1_struct_0 (k1_lattice5 X0))) \Rightarrow (k12_lattice3 (k1_lattice5 X0) X1 X2 = k3_xboole_0 X1 X2))$$