

t9_nat_lat

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Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_nat_lat : \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_nat_lat : \iota$ be given. Let $v7_ordinal1 : \iota \Rightarrow o$ be given. Let $k6_nat_d : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $g3_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v6_membered : \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $u1_lattices : \iota \Rightarrow \iota$ be given. Let $l3_lattices : \iota \Rightarrow o$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $k5_numbers : \iota$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v3_lattices : \iota \Rightarrow o$ be given. Let $k2_nat_lat : \iota$ be given. Let $u2_lattices : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.(v7_ordinal1 X0) \Rightarrow (\forall X1.(v7_ordinal1 X1) \Rightarrow (\forall X2. \\ & (v7_ordinal1 X2) \Rightarrow (k6_nat_d X0 (k6_nat_d X1 X2) = k6_nat_d (k6_nat_d \\ & X0 X1) X2))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1_funct_1 X1) \wedge \\ & ((v1_funct_2 X1 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))))) \wedge ((m1_subset_1 X2 X0) \wedge \\ & (m1_subset_1 X3 X0))) \Rightarrow (k5_binop_1 X0 X1 X2 X3 = k1_binop_1 X1 X2 X3) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((m1_subset_1 X0 (u1_struct_0 k3_nat_lat)) \wedge \\ & (m1_subset_1 X1 (u1_struct_0 k3_nat_lat))) \Rightarrow (k2_lattices k3_nat_lat \\ & X0 X1 = k6_nat_d X0 X1) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1_funct_1 X1)\wedge((v1_funct_2 \\ & X1 (k2_zfmisc_1 X0 X0) X0)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) X0))))\wedge((v1_funct_1 X2)\wedge((v1_funct_2 X2 \\ & (k2_zfmisc_1 X0 X0) X0)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) X0))))))\Rightarrow(\forall X3.\forall X4.\forall X5. \\ & (g3_lattices X0 X1 X2 = g3_lattices X3 X4 X5)\Rightarrow((X0 = X3)\wedge((X1 = X4)\wedge \\ & (X2 = X5)))) \end{aligned} \tag{4}$$

Assume the following.

$$v6_membered (u1_struct_0 k3_nat_lat) \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_lattices X0)\Rightarrow((v1_funct_1 (u1_lattices X0))\wedge \\ & ((v1_funct_2 (u1_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (\\ & u1_struct_0 X0)) (u1_struct_0 X0))\wedge(m1_subset_1 (u1_lattices \\ & X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (\\ & u1_struct_0 X0)) (u1_struct_0 X0)))))) \end{aligned} \tag{6}$$

Assume the following.

$$\forall X0.(l3_lattices X0)\Rightarrow((l1_lattices X0)\wedge(l2_lattices X0)) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.((v7_ordinal1 X0)\wedge(v7_ordinal1 X1))\Rightarrow(\\ m1_subset_1 (k6_nat_d X0 X1) k5_numbers) \tag{8}$$

Assume the following.

$$(\neg v2_struct_0 k3_nat_lat)\wedge((v3_lattices k3_nat_lat)\wedge(l3_lattices \\ k3_nat_lat)) \tag{9}$$

Assume the following.

$$\begin{aligned} & (v1_funct_1 k2_nat_lat)\wedge((v1_funct_2 k2_nat_lat (k2_zfmisc_1 \\ & k5_numbers k5_numbers) k5_numbers)\wedge(m1_subset_1 k2_nat_lat \\ & (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 k5_numbers k5_numbers) \\ & k5_numbers)))) \end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned} & (v1_funct_1 k1_nat_lat)\wedge((v1_funct_2 k1_nat_lat (k2_zfmisc_1 \\ & k5_numbers k5_numbers) k5_numbers)\wedge(m1_subset_1 k1_nat_lat \\ & (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 k5_numbers k5_numbers) \\ & k5_numbers)))) \end{aligned} \tag{11}$$

Assume the following.

$$k3_nat_lat = g3_lattices\ k5_numbers\ k2_nat_lat\ k1_nat_lat \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0\ X0) \wedge (l1_lattices\ X0)) \Rightarrow (\forall X1. \\ (m1_subset_1\ X1\ (u1_struct_0\ X0)) \Rightarrow (\forall X2.(m1_subset_1\ X2 \\ (u1_struct_0\ X0)) \Rightarrow (k2_lattices\ X0\ X1\ X2 = k5_binop_1\ (u1_struct_0 \\ X0)\ (u1_lattices\ X0)\ X1\ X2))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.(v6_membered\ X0) \Rightarrow (\forall X1.(m1_subset_1\ X1\ X0) \Rightarrow (v7_ordinal1\ X1)) \quad (14)$$

Assume the following.

$$\forall X0.(l3_lattices\ X0) \Rightarrow ((v3_lattices\ X0) \Rightarrow (X0 = g3_lattices\ (u1_struct_0\ X0)\ (u2_lattices\ X0)\ (u1_lattices\ X0))) \quad (15)$$

Theorem 1

$$\begin{aligned} \forall X0.(m1_subset_1\ X0\ (u1_struct_0\ k3_nat_lat)) \Rightarrow (\forall X1. \\ (m1_subset_1\ X1\ (u1_struct_0\ k3_nat_lat)) \Rightarrow (\forall X2.(m1_subset_1 \\ X2\ (u1_struct_0\ k3_nat_lat)) \Rightarrow (k1_binop_1\ k1_nat_lat\ X0\ (k1_binop_1 \\ k1_nat_lat\ X1\ X2) = k1_binop_1\ k1_nat_lat\ (k1_binop_1\ k1_nat_lat \\ X0\ X1)\ X2))) \end{aligned}$$