

t28_real_lat (TMZX-
oQq3nfuCYbKnqhMuBPnE3Gsocn8Rzfb)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $k6_real_lat : \iota \Rightarrow \iota$ be given. Let $v10_lattices : \iota \Rightarrow o$ be given. Let $v11_lattices : \iota \Rightarrow o$ be given. Let $l3_lattices : \iota \Rightarrow o$ be given. Let $m2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $k9_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funcsdom : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_real_lat : \iota \Rightarrow \iota$ be given. Let $k4_real_lat : \iota \Rightarrow \iota$ 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 $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $g3_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v4_lattices : \iota \Rightarrow o$ be given. Let $v5_lattices : \iota \Rightarrow o$ be given. Let $v6_lattices : \iota \Rightarrow o$ 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. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $u2_lattices : \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $u1_lattices : \iota \Rightarrow \iota$ be given. Let $v3_lattices : \iota \Rightarrow o$ be given. Let $k2_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. (m2_funct_2 X1 X0 k1_numbers \\
 & (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X2. (m2_funct_2 X2 X0 k1_numbers \\
 & (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X3. (m2_funct_2 X3 X0 k1_numbers \\
 & (k9_funct_2 X0 k1_numbers)) \Rightarrow (r2_funct_2 X0 k1_numbers (k1_funcsdom \\
 & X0 k1_numbers (k5_real_lat X0) X1 (k1_funcsdom X0 k1_numbers (k4_real_lat \\
 & X0) X2 X3)) (k1_funcsdom X0 k1_numbers (k4_real_lat X0) (k1_funcsdom \\
 & X0 k1_numbers (k5_real_lat X0) X1 X2) (k1_funcsdom X0 k1_numbers \\
 & (k5_real_lat X0) X1 X3))))))
 \end{aligned}
 \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1_funct_1 X2)\wedge \\ & ((v1_funct_2 X2 X0 X1)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X0 X1)))))\wedge((v1_funct_1 X3)\wedge((v1_funct_2 X3 X0 X1)\wedge(m1_subset_1 \\ & X3 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1))))))\Rightarrow((r2_funct_2 X0 X1 X2 \\ & X3)\Leftrightarrow(X2 = X3)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X1)\wedge(m1_funct_2 \\ & X2 X0 X1))\Rightarrow(\forall X3.(m2_funct_2 X3 X0 X1 X2)\Leftrightarrow(m1_subset_1 X3 \\ & X2)) \end{aligned} \quad (3)$$

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.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 \\ & X1)\wedge(((v1_funct_1 X2)\wedge((v1_funct_2 X2 (k2_zfmisc_1 (k9_funct_2 \\ & X0 X1) (k9_funct_2 X0 X1)) (k9_funct_2 X0 X1))\wedge(m1_subset_1 X2 (\\ & k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (k9_funct_2 X0 X1) (k9_funct_2 \\ & X0 X1)) (k9_funct_2 X0 X1)))))\wedge((m1_subset_1 X3 (k9_funct_2 X0 \\ & X1))\wedge(m1_subset_1 X4 (k9_funct_2 X0 X1))))))\Rightarrow(k1_funcsdom X0 X1 \\ & X2 X3 X4 = k1_binop_1 X2 X3 X4) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1_funct_1 X1)\wedge((v1_funct_2 \\ & X1 (k2_zfmisc_1 X0 X0) X0)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) X0)))))\wedge((v1_funct_1 X2)\wedge((v1_funct_2 X2 \\ & (k2_zfmisc_1 X0 X0) X0)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) X0))))))\Rightarrow(\forall X3.\forall X4.\forall X5. \\ & (g3_lattices X0 X1 X2 = g3_lattices X3 X4 X5)\Rightarrow((X0 = X3)\wedge((X1 = X4)\wedge \\ & (X2 = X5)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0)\Rightarrow((\neg v2_struct_0 (k6_real_lat X0))\wedge \\ & ((v4_lattices (k6_real_lat X0))\wedge((v5_lattices (k6_real_lat \\ & X0))\wedge((v6_lattices (k6_real_lat X0))\wedge((v7_lattices (k6_real_lat \\ & X0))\wedge((v8_lattices (k6_real_lat X0))\wedge(v9_lattices (k6_real_lat \\ & X0)))))))) \end{aligned} \quad (7)$$

Assume the following.

$$\neg v1_xboole_0 \ k1_numbers \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.(l2_lattices \ X0) \Rightarrow & ((v1_funct_1 \ (u2_lattices \ X0)) \wedge \\ & ((v1_funct_2 \ (u2_lattices \ X0) \ (k2_zfmisc_1 \ (u1_struct_0 \ X0) \ (\\ & u1_struct_0 \ X0)) \ (u1_struct_0 \ X0)) \wedge (m1_subset_1 \ (u2_lattices \\ & X0) \ (k1_zfmisc_1 \ (k2_zfmisc_1 \ (k2_zfmisc_1 \ (u1_struct_0 \ X0) \ (\\ & u1_struct_0 \ X0)) \ (u1_struct_0 \ X0)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1_lattices \ X0) \Rightarrow & ((v1_funct_1 \ (u1_lattices \ X0)) \wedge \\ & ((v1_funct_2 \ (u1_lattices \ X0) \ (k2_zfmisc_1 \ (u1_struct_0 \ X0) \ (\\ & u1_struct_0 \ X0)) \ (u1_struct_0 \ X0)) \wedge (m1_subset_1 \ (u1_lattices \\ & X0) \ (k1_zfmisc_1 \ (k2_zfmisc_1 \ (k2_zfmisc_1 \ (u1_struct_0 \ X0) \ (\\ & u1_struct_0 \ X0)) \ (u1_struct_0 \ X0)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 \ X1) \wedge (m1_funct_2 \\ X2 \ X0 \ X1)) \Rightarrow & (\forall X3.(m2_funct_2 \ X3 \ X0 \ X1 \ X2) \Rightarrow ((v1_funct_1 \ X3) \wedge \\ & ((v1_funct_2 \ X3 \ X0 \ X1) \wedge (m1_subset_1 \ X3 \ (k1_zfmisc_1 \ (k2_zfmisc_1 \\ & X0 \ X1)))))) \end{aligned} \quad (11)$$

Assume the following.

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

Assume the following.

$$\forall X0.\forall X1.(\neg v1_xboole_0 \ X1) \Rightarrow (m1_funct_2 \ (k9_funct_2 \ X0 \ X1) \ X0 \ X1) \quad (13)$$

Assume the following.

$$\forall X0.(\neg v1_xboole_0 \ X0) \Rightarrow ((\neg v2_struct_0 \ (k6_real_lat \ X0)) \wedge ((v3_lattices \ (k6_real_lat \ X0)) \wedge (l3_lattices \ (k6_real_lat \ X0)))) \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0 \ X0) \Rightarrow & ((v1_funct_1 \ (k5_real_lat \ X0)) \wedge \\ & ((v1_funct_2 \ (k5_real_lat \ X0) \ (k2_zfmisc_1 \ (k9_funct_2 \ X0 \ k1_numbers) \\ & (k9_funct_2 \ X0 \ k1_numbers)) \ (k9_funct_2 \ X0 \ k1_numbers)) \wedge (m1_subset_1 \\ & (k5_real_lat \ X0) \ (k1_zfmisc_1 \ (k2_zfmisc_1 \ (k2_zfmisc_1 \ (k9_funct_2 \\ & X0 \ k1_numbers) \ (k9_funct_2 \ X0 \ k1_numbers)) \ (k9_funct_2 \ X0 \ k1_numbers)))))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0 X0) \Rightarrow & ((v1_funct_1 (k4_real_lat X0)) \wedge \\ & ((v1_funct_2 (k4_real_lat X0) (k2_zfmisc_1 (k9_funct_2 X0 k1_numbers) \\ & (k9_funct_2 X0 k1_numbers)) (k9_funct_2 X0 k1_numbers)) \wedge (m1_subset_1 \\ & (k4_real_lat X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (k9_funct_2 \\ & X0 k1_numbers) (k9_funct_2 X0 k1_numbers)) (k9_funct_2 X0 k1_numbers)))))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0) \wedge (l1_lattices \\ X0)) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 \\ X0)))) \Rightarrow (m1_subset_1 (k2_lattices X0 X1 X2) (u1_struct_0 X0)) \end{aligned} \quad (17)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0) \wedge (l2_lattices \\ X0)) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 \\ X0)))) \Rightarrow (m1_subset_1 (k1_lattices X0 X1 X2) (u1_struct_0 X0)) \end{aligned} \quad (18)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (k6_real_lat X0 = g3_lattices (k9_funct_2 \\ X0 k1_numbers) (k4_real_lat X0) (k5_real_lat X0)) \end{aligned} \quad (19)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge (l1_lattices X0)) \Rightarrow (\forall X1. \\ (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 \\ (u1_struct_0 X0)) \Rightarrow (k2_lattices X0 X1 X2 = k5_binop_1 (u1_struct_0 \\ X0) (u1_lattices X0) X1 X2))) \end{aligned} \quad (20)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge (l2_lattices X0)) \Rightarrow (\forall X1. \\ (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 \\ (u1_struct_0 X0)) \Rightarrow (k1_lattices X0 X1 X2 = k5_binop_1 (u1_struct_0 \\ X0) (u2_lattices X0) X1 X2))) \end{aligned} \quad (21)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge (l3_lattices X0)) \Rightarrow ((v11_lattices \\ X0) \Leftrightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\ (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\ (u1_struct_0 X0)) \Rightarrow (k2_lattices X0 X1 (k1_lattices X0 X2 X3) = k1_lattices \\ X0 (k2_lattices X0 X1 X2) (k2_lattices X0 X1 X3)))))) \end{aligned} \quad (22)$$

Assume the following.

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

Assume the following.

$$\begin{aligned} \forall X0. (l3_lattices\ X0) \Rightarrow & ((v3_lattices\ X0) \Rightarrow (X0 = g3_lattices \\ (u1_struct_0\ X0)\ (u2_lattices\ X0)\ & (u1_lattices\ X0))) \end{aligned} \quad (24)$$

Theorem 1

$$\begin{aligned} \forall X0. (\neg v1_xboole_0\ X0) \Rightarrow & ((\neg v2_struct_0\ (k6_real_lat\ X0)) \wedge \\ ((v10_lattices\ (k6_real_lat\ X0)) \wedge & ((v11_lattices\ (k6_real_lat \\ X0)) \wedge (l3_lattices\ (k6_real_lat\ X0)))))) & \end{aligned}$$