

l16_filter_2 (TMGkfXYsPUerk- CLqrAYX1EpCg8GnNp9f7Rj)

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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 $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $v18_lattices : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v21_lattices : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_lattices : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v5_lattices : \iota \Rightarrow o$ 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 $k1_lattices : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r3_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_lattices : \iota \Rightarrow o$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $v7_lattices : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v5_lattices X0) \wedge ((v6_lattices \\ & X0) \wedge ((v8_lattices X0) \wedge ((v9_lattices X0) \wedge (l3_lattices X0)))))) \Rightarrow \\ & (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 \\ & X2 (u1_struct_0 X0)) \Rightarrow (r1_lattices X0 X1 (k1_lattices X0 X1 X2)))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((X0 \in X1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 X2))) \Rightarrow (m1_subset_1 X0 X2) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v6_lattices \\ & X0) \wedge ((v8_lattices X0) \wedge ((v9_lattices X0) \wedge (l3_lattices X0)))))) \wedge \\ & ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 \\ & X0))) \Rightarrow ((r3_lattices X0 X1 X2) \Leftrightarrow (r1_lattices X0 X1 X2)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v4_lattices \\ & X0) \wedge (l2_lattices X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (\\ & m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow (k3_lattices X0 X1 X2 = k1_lattices \\ & X0 X1 X2) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.(l3_lattices\ X0)\Rightarrow((l1_lattices\ X0)\wedge(l2_lattices\ X0)) \quad (5)$$

Assume the following.

$$\begin{aligned} &\forall X0.((\neg v2_struct_0\ X0)\wedge(l2_lattices\ X0))\Rightarrow(\forall X1. \\ &(m1_subset_1\ X1\ (u1_struct_0\ X0))\Rightarrow(\forall X2.(m1_subset_1\ X2 \\ &(u1_struct_0\ X0))\Rightarrow((r1_lattices\ X0\ X1\ X2)\Leftrightarrow(k1_lattices\ X0\ X1\ X2 = \\ &\quad X2)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} &\forall X0.((\neg v2_struct_0\ X0)\wedge((v10_lattices\ X0)\wedge(l3_lattices \\ &\quad X0)))\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ (u1_struct_0 \\ &\quad X0)))\Rightarrow((v21_lattices\ X1\ X0)\Leftrightarrow(\forall X2.(m1_subset_1\ X2\ (u1_struct_0 \\ &\quad X0))\Rightarrow(\forall X3.(m1_subset_1\ X3\ (u1_struct_0\ X0))\Rightarrow(((X2\ \in\ X1)\wedge \\ &\quad (X3\ \in\ X1))\Rightarrow(k3_lattices\ X0\ X2\ X3\ \in\ X1)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} &\forall X0.((\neg v2_struct_0\ X0)\wedge((v10_lattices\ X0)\wedge(l3_lattices \\ &\quad X0)))\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ (u1_struct_0 \\ &\quad X0)))\Rightarrow((v18_lattices\ X1\ X0)\Leftrightarrow(\forall X2.(m1_subset_1\ X2\ (u1_struct_0 \\ &\quad X0))\Rightarrow(\forall X3.(m1_subset_1\ X3\ (u1_struct_0\ X0))\Rightarrow(((r3_lattices \\ &\quad X0\ X2\ X3)\wedge(X3\ \in\ X1))\Rightarrow(X2\ \in\ X1)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} &\forall X0.\forall X1.\forall X2.(((\neg v2_struct_0\ X0)\wedge((v4_lattices \\ &\quad X0)\wedge(l2_lattices\ X0)))\wedge((m1_subset_1\ X1\ (u1_struct_0\ X0))\wedge(\\ &\quad m1_subset_1\ X2\ (u1_struct_0\ X0))))\Rightarrow(k3_lattices\ X0\ X1\ X2 = k3_lattices \\ &\quad X0\ X2\ X1) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} &\forall X0.(l3_lattices\ X0)\Rightarrow(((\neg v2_struct_0\ X0)\wedge(v10_lattices \\ &\quad X0))\Rightarrow((\neg v2_struct_0\ X0)\wedge((v4_lattices\ X0)\wedge((v5_lattices\ X0)\wedge \\ &\quad ((v6_lattices\ X0)\wedge((v7_lattices\ X0)\wedge((v8_lattices\ X0)\wedge(v9_lattices \\ &\quad X0)))))))) \end{aligned} \quad (10)$$

Theorem 1

$$\begin{aligned} &\forall X0.((\neg v2_struct_0\ X0)\wedge((v10_lattices\ X0)\wedge(l3_lattices \\ &\quad X0)))\Rightarrow(\forall X1.((\neg v1_xboole_0\ X1)\wedge(m1_subset_1\ X1\ (k1_zfmisc_1 \\ &\quad (u1_struct_0\ X0))))\Rightarrow(((\neg v1_xboole_0\ X1)\wedge((v18_lattices\ X1\ X0)\wedge \\ &\quad ((v21_lattices\ X1\ X0)\wedge(m1_subset_1\ X1\ (k1_zfmisc_1\ (u1_struct_0 \\ &\quad X0))))))\Leftrightarrow(\forall X2.(m1_subset_1\ X2\ (u1_struct_0\ X0))\Rightarrow(\forall X3. \\ &\quad (m1_subset_1\ X3\ (u1_struct_0\ X0))\Rightarrow(((X2\ \in\ X1)\wedge(X3\ \in\ X1))\Leftrightarrow(k3_lattices \\ &\quad X0\ X2\ X3\ \in\ X1)))))) \end{aligned}$$