

t8\_filter\_0 (TMQsC-  
tqAWv1RM8LVo2m5h4iAcirDyLo2w6Q)

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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  $v19\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v20\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v6\_lattices : \iota \Rightarrow o$  be given. Let  $v8\_lattices : \iota \Rightarrow o$  be given. Let  $r1\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v9\_lattices : \iota \Rightarrow o$  be given. Let  $k2\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  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.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v6\_lattices X0) \wedge ((v8\_lattices \\ X0) \wedge (l3\_lattices X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (r1\_lattices \\ X0 (k4\_lattices X0 X1 X2) X1))) \end{aligned} \quad (1)$$

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.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v8\_lattices X0) \wedge ((v9\_lattices \\ X0) \wedge (l3\_lattices X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((r1\_lattices \\ X0 X1 X2) \Leftrightarrow (k2\_lattices X0 X1 X2 = X1)))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((v6\_lattices \\ X0) \wedge ((v8\_lattices X0) \wedge ((v9\_lattices X0) \wedge (l3\_lattices X0)))) \wedge \\ ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 \\ X0)))) \Rightarrow ((r3\_lattices X0 X1 X2) \Leftrightarrow (r1\_lattices X0 X1 X2))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge(v6\_lattices X0)\wedge(l1\_lattices X0))\wedge((m1\_subset\_1 X1 (u1\_struct\_0 X0))\wedge(m1\_subset\_1 X2 (u1\_struct\_0 X0))))\Rightarrow(k4\_lattices X0 X1 X2 = k2\_lattices X0 X1 X2) \quad (5)$$

Assume the following.

$$\forall X0.(l3\_lattices X0)\Rightarrow((l1\_lattices X0)\wedge(l2\_lattices X0)) \quad (6)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge(l3\_lattices X0)))\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))\Rightarrow((v20\_lattices X1 X0)\Leftrightarrow(\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0))\Rightarrow(\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0))\Rightarrow(((X2 \in X1)\wedge(X3 \in X1))\Rightarrow(k4\_lattices X0 X2 X3 \in X1)))))) \quad (7)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge(l3\_lattices X0)))\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))\Rightarrow((v19\_lattices X1 X0)\Leftrightarrow(\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0))\Rightarrow(\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0))\Rightarrow(((r3\_lattices X0 X2 X3)\wedge(X2 \in X1))\Rightarrow(X3 \in X1)))))) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge(v6\_lattices X0)\wedge(l1\_lattices X0))\wedge((m1\_subset\_1 X1 (u1\_struct\_0 X0))\wedge(m1\_subset\_1 X2 (u1\_struct\_0 X0))))\Rightarrow(k4\_lattices X0 X1 X2 = k4\_lattices X0 X2 X1) \quad (9)$$

Assume the following.

$$\forall X0.(l3\_lattices X0)\Rightarrow(((\neg v2\_struct\_0 X0)\wedge(v10\_lattices X0))\Rightarrow((\neg v2\_struct\_0 X0)\wedge((v4\_lattices X0)\wedge((v5\_lattices X0)\wedge((v6\_lattices X0)\wedge((v7\_lattices X0)\wedge((v8\_lattices X0)\wedge(v9\_lattices X0)))))))) \quad (10)$$

**Theorem 1**

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge(l3\_lattices X0)))\Rightarrow(\forall X1.((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))))\Rightarrow(((\neg v1\_xboole\_0 X1)\wedge((v19\_lattices X1 X0)\wedge((v20\_lattices X1 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))))))\Leftrightarrow(\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0))\Rightarrow(\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0))\Rightarrow(((X2 \in X1)\wedge(X3 \in X1))\Leftrightarrow(k4\_lattices X0 X2 X3 \in X1))))))$$