

t33\_filter\_2  
(TMbctxTRzonztZ5QTA89B1rcTk1Bdr9G2ZZ)

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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  $v14\_lattices : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v18\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v21\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_filter\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v13\_lattices : \iota \Rightarrow o$  be given. Let  $k1\_lattice2 : \iota \Rightarrow \iota$  be given. Let  $v1\_filter\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_filter\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v19\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v20\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  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  $g3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_filter\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_lattices : \iota \Rightarrow o$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $u2\_lattices : \iota \Rightarrow \iota$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $u1\_lattices : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \Rightarrow ((v14\_lattices X0) \Leftrightarrow (v13\_lattices (k1\_lattice2 X0))) \quad (1)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \Rightarrow (\forall X1.((\neg v1\_xboole\_0 X1) \wedge ((v18\_lattices X1 X0) \wedge ((v21\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))) \Rightarrow ((r2\_filter\_2 X0 X1) \Leftrightarrow (v1\_filter\_0 (k3\_filter\_2 X0 X1) (k1\_lattice2 X0)))) \quad (2)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices X0))) \Rightarrow ((v13\_lattices X0) \Rightarrow (\forall X1.((\neg v1\_xboole\_0 X1) \wedge ((v19\_lattices X1 X0) \wedge ((v20\_lattices X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))) \Rightarrow (\neg (X1 \neq u1\_struct\_0 X0) \wedge (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v19\_lattices X2 X0) \wedge ((v20\_lattices X2 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))) \Rightarrow (\neg (r1\_tarski X1 X2) \wedge (v1\_filter\_0 X2 X0)))))) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1\_funct\_1 X1)\wedge((v1\_funct\_2 \\ & X1 (k2\_zfmisc\_1 X0 X0) X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X0) X0))))\wedge((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 \\ & (k2\_zfmisc\_1 X0 X0) X0)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X0) X0))))))\Rightarrow(\forall X3.\forall X4.\forall X5. \\ & (g3\_lattices X0 X1 X2 = g3\_lattices X3 X4 X5)\Rightarrow((X0 = X3)\wedge((X1 = X4)\wedge \\ & (X2 = X5)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge \\ & (l3\_lattices X0)))\wedge((v19\_lattices X1 (k1\_lattice2 X0))\wedge(m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (u1\_struct\_0 (k1\_lattice2 X0))))))\Rightarrow(v18\_lattices \\ & (k4\_filter\_2 X0 X1) X0) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge(l3\_lattices \\ & X0)))\Rightarrow((v3\_lattices (k1\_lattice2 X0))\wedge(v10\_lattices (k1\_lattice2 \\ & X0))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge \\ & (l3\_lattices X0)))\wedge((v18\_lattices X1 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))\Rightarrow(v19\_lattices (k3\_filter\_2 X0 X1) (k1\_lattice2 \\ & X0)) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge \\ & (l3\_lattices X0)))\wedge((v20\_lattices X1 (k1\_lattice2 X0))\wedge(m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (u1\_struct\_0 (k1\_lattice2 X0))))))\Rightarrow(v21\_lattices \\ & (k4\_filter\_2 X0 X1) X0) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge \\ & (l3\_lattices X0)))\wedge((v21\_lattices X1 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))\Rightarrow(v20\_lattices (k3\_filter\_2 X0 X1) (k1\_lattice2 \\ & X0)) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge(l3\_lattices X0))\Rightarrow((\neg v2\_struct\_0 \\ & (k1\_lattice2 X0))\wedge(v3\_lattices (k1\_lattice2 X0))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.(l2\_lattices\ X0) \Rightarrow & ((v1\_funct\_1\ (u2\_lattices\ X0)) \wedge \\ & ((v1\_funct\_2\ (u2\_lattices\ X0)\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ ( \\ & u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0)) \wedge (m1\_subset\_1\ (u2\_lattices \\ & X0)\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ ( \\ & u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_lattices\ X0) \Rightarrow & ((v1\_funct\_1\ (u1\_lattices\ X0)) \wedge \\ & ((v1\_funct\_2\ (u1\_lattices\ X0)\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ ( \\ & u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0)) \wedge (m1\_subset\_1\ (u1\_lattices \\ & X0)\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ ( \\ & u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0)))))) \end{aligned} \quad (12)$$

Assume the following.

$$\forall X0.(l3\_lattices\ X0) \Rightarrow ((l1\_lattices\ X0) \wedge (l2\_lattices\ X0)) \quad (13)$$

Assume the following.

$$\forall X0.(l3\_lattices\ X0) \Rightarrow ((v3\_lattices\ (k1\_lattice2\ X0)) \wedge (l3\_lattices\ (k1\_lattice2\ X0))) \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0\ X0) \wedge & ((v10\_lattices\ X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & (k1\_lattice2\ X0)))) \Rightarrow (k4\_filter\_2\ X0\ X1 = X1)) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0\ X0) \wedge & ((v10\_lattices\ X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & X0))) \Rightarrow (k3\_filter\_2\ X0\ X1 = X1)) \end{aligned} \quad (16)$$

Assume the following.

$$\forall X0.(l3\_lattices\ X0) \Rightarrow (k1\_lattice2\ X0 = g3\_lattices\ (u1\_struct\_0\ X0)\ (u1\_lattices\ X0)\ (u2\_lattices\ X0)) \quad (17)$$

Assume the following.

$$\forall X0.(l3\_lattices\ X0) \Rightarrow ((v3\_lattices\ X0) \Rightarrow (X0 = g3\_lattices\ (u1\_struct\_0\ X0)\ (u2\_lattices\ X0)\ (u1\_lattices\ X0))) \quad (18)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0\ X0) \wedge & ((v10\_lattices\ X0) \wedge (l3\_lattices \\ & X0))) \Rightarrow ((v14\_lattices\ X0) \Rightarrow (\forall X1.((\neg v1\_xboole\_0\ X1) \wedge (( \\ & v18\_lattices\ X1\ X0) \wedge ((v21\_lattices\ X1\ X0) \wedge (m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ X0)))))) \Rightarrow (\neg (X1 \neq u1\_struct\_0\ X0) \wedge (\forall X2.(( \\ & \neg v1\_xboole\_0\ X2) \wedge ((v18\_lattices\ X2\ X0) \wedge ((v21\_lattices\ X2\ X0) \wedge \\ & (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))))) \Rightarrow (\neg (r1\_tarski \\ & X1\ X2) \wedge (r2\_filter\_2\ X0\ X2)))))) \end{aligned}$$