

l46\_filter\_2 (TMXL-  
GzvH9yZhQj5yQGHQk783DDgGZzhXEat)

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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  $g3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u2\_lattices : \iota \Rightarrow \iota$  be given. Let  $u1\_lattices : \iota \Rightarrow \iota$  be given. Let  $k3\_filter\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_filter\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v18\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v21\_lattices : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v19\_lattices : \iota \Rightarrow \iota \Rightarrow o$  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  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\
& X0))) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v10\_lattices X1) \wedge (l3\_lattices \\
& X1)))) \Rightarrow ((g3\_lattices (u1\_struct\_0 X0) (u2\_lattices X0) (u1\_lattices \\
& X0) = g3\_lattices (u1\_struct\_0 X1) (u2\_lattices X1) (u1\_lattices \\
& X1)) \Rightarrow (\forall X2. ((\neg v1\_xboole\_0 X2) \wedge ((v18\_lattices X2 X0) \wedge \\
& (v21\_lattices X2 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\
& X0)))))) \Rightarrow ((\neg v1\_xboole\_0 X2) \wedge ((v18\_lattices X2 X1) \wedge ((v21\_lattices \\
& X2 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X1))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\
& X0))) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v10\_lattices X1) \wedge (l3\_lattices \\
& X1)))) \Rightarrow ((g3\_lattices (u1\_struct\_0 X0) (u2\_lattices X0) (u1\_lattices \\
& X0) = g3\_lattices (u1\_struct\_0 X1) (u2\_lattices X1) (u1\_lattices \\
& X1)) \Rightarrow (\forall X2. ((\neg v1\_xboole\_0 X2) \wedge ((v19\_lattices X2 X0) \wedge \\
& (v20\_lattices X2 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\
& X0)))))) \Rightarrow ((\neg v1\_xboole\_0 X2) \wedge ((v19\_lattices X2 X1) \wedge ((v20\_lattices \\
& X2 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X1))))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1\_funct\_1 X1)\wedge((v1\_funct\_2 \\ & X1 (k2\_zfmisc\_1 X0 X0) X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X0) X0))))\wedge((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 \\ & (k2\_zfmisc\_1 X0 X0) X0)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X0) X0))))))\Rightarrow(\forall X3.\forall X4.\forall X5. \\ & (g3\_lattices X0 X1 X2 = g3\_lattices X3 X4 X5)\Rightarrow((X0 = X3)\wedge((X1 = X4)\wedge \\ & (X2 = X5)))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.(l2\_lattices X0)\Rightarrow((v1\_funct\_1 (u2\_lattices X0))\wedge \\ & ((v1\_funct\_2 (u2\_lattices X0) (k2\_zfmisc\_1 (u1\_struct\_0 X0) ( \\ & u1\_struct\_0 X0)) (u1\_struct\_0 X0))\wedge(m1\_subset\_1 (u2\_lattices \\ & X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) ( \\ & u1\_struct\_0 X0)) (u1\_struct\_0 X0)))))) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_lattices X0)\Rightarrow((v1\_funct\_1 (u1\_lattices X0))\wedge \\ & ((v1\_funct\_2 (u1\_lattices X0) (k2\_zfmisc\_1 (u1\_struct\_0 X0) ( \\ & u1\_struct\_0 X0)) (u1\_struct\_0 X0))\wedge(m1\_subset\_1 (u1\_lattices \\ & X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) ( \\ & u1\_struct\_0 X0)) (u1\_struct\_0 X0)))))) \end{aligned} \tag{5}$$

Assume the following.

$$\forall X0.(l3\_lattices X0)\Rightarrow((l1\_lattices X0)\wedge(l2\_lattices X0)) \tag{6}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge \\ & (l3\_lattices X0)))\wedge((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))))\Rightarrow((\neg v1\_xboole\_0 (k7\_filter\_2 X0 X1))\wedge(( \\ & v18\_lattices (k7\_filter\_2 X0 X1) X0)\wedge((v21\_lattices (k7\_filter\_2 \\ & X0 X1) X0)\wedge(m1\_subset\_1 (k7\_filter\_2 X0 X1) (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge \\ & (l3\_lattices X0)))\wedge((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))))\Rightarrow((\neg v1\_xboole\_0 (k3\_filter\_0 X0 X1))\wedge(( \\ & v19\_lattices (k3\_filter\_0 X0 X1) X0)\wedge((v20\_lattices (k3\_filter\_0 \\ & X0 X1) X0)\wedge(m1\_subset\_1 (k3\_filter\_0 X0 X1) (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\
& X0))) \Rightarrow (\forall X1.((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\
& (u1\_struct\_0 X0)))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v18\_lattices \\
& X2 X0) \wedge ((v21\_lattices X2 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\
& X0)))))) \Rightarrow ((X2 = k7\_filter\_2 X0 X1) \Leftrightarrow ((r1\_tarski X1 X2) \wedge (\forall X3. \\
& ((\neg v1\_xboole\_0 X3) \wedge ((v18\_lattices X3 X0) \wedge ((v21\_lattices X3 X0) \wedge \\
& (m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))) \Rightarrow ((r1\_tarski \\
& X1 X3) \Rightarrow (r1\_tarski X2 X3))))))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\
& X0))) \Rightarrow (\forall X1.((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\
& (u1\_struct\_0 X0)))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v19\_lattices \\
& X2 X0) \wedge ((v20\_lattices X2 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\
& X0)))))) \Rightarrow ((X2 = k3\_filter\_0 X0 X1) \Leftrightarrow ((r1\_tarski X1 X2) \wedge (\forall X3. \\
& ((\neg v1\_xboole\_0 X3) \wedge ((v19\_lattices X3 X0) \wedge ((v20\_lattices X3 X0) \wedge \\
& (m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))) \Rightarrow ((r1\_tarski \\
& X1 X3) \Rightarrow (r1\_tarski X2 X3))))))
\end{aligned} \tag{10}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge (l3\_lattices \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v10\_lattices X1) \wedge (l3\_lattices \\
& X1)))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (u1\_struct\_0 X0)))) \Rightarrow (\forall X3.((\neg v1\_xboole\_0 X3) \wedge (m1\_subset\_1 \\
& X3 (k1\_zfmisc\_1 (u1\_struct\_0 X1)))) \Rightarrow (((g3\_lattices (u1\_struct\_0 \\
& X0) (u2\_lattices X0) (u1\_lattices X0) = g3\_lattices (u1\_struct\_0 \\
& X1) (u2\_lattices X1) (u1\_lattices X1)) \wedge (X2 = X3)) \Rightarrow ((k3\_filter\_0 \\
& X0 X2 = k3\_filter\_0 X1 X3) \wedge (k7\_filter\_2 X0 X2 = k7\_filter\_2 X1 X3))))))
\end{aligned}$$