

# t6\_topalg\_4 (TMNZQU- cuMVDzWiX4ePKJPdwdixcnsuSMVvE)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_group\_1 : \iota \Rightarrow o$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  be given. Let  $l3\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $r1\_group\_6 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_group\_6 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_group\_7 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $np\_2 : \iota$  be given. Let  $k10\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_group\_6 : \iota \Rightarrow \iota \Rightarrow o$  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  $v3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_topalg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v15\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_group\_7 : \iota \Rightarrow o$  be given. Let  $v3\_group\_7 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_group\_7 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_monoid\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_group\_1 X0) \wedge ((v3\_group\_1 \\
& X0) \wedge (l3\_algstr\_0 X0)))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_group\_1 \\
& X1) \wedge ((v3\_group\_1 X1) \wedge (l3\_algstr\_0 X1)))) \Rightarrow (\forall X2.((\neg v2\_struct\_0 \\
& X2) \wedge ((v2\_group\_1 X2) \wedge ((v3\_group\_1 X2) \wedge (l3\_algstr\_0 X2)))) \Rightarrow \\
& (\forall X3.((\neg v2\_struct\_0 X3) \wedge ((v2\_group\_1 X3) \wedge ((v3\_group\_1 \\
& X3) \wedge (l3\_algstr\_0 X3)))) \Rightarrow (\forall X4.((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 \\
& X4 (u1\_struct\_0 X0) (u1\_struct\_0 X2)) \wedge ((v1\_group\_6 X4 X0 X2) \wedge ( \\
& m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X2)))))) \Rightarrow (\forall X5.((v1\_funct\_1 X5) \wedge ((v1\_funct\_2 X5 (u1\_struct\_0 \\
& X1) (u1\_struct\_0 X3)) \wedge ((v1\_group\_6 X5 X1 X3) \wedge (m1\_subset\_1 X5 ( \\
& k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X3)))))) \Rightarrow \\
& (((v3\_funct\_2 X4 (u1\_struct\_0 X0) (u1\_struct\_0 X2)) \wedge (v3\_funct\_2 \\
& X5 (u1\_struct\_0 X1) (u1\_struct\_0 X3))) \Rightarrow (v3\_funct\_2 (k1\_topalg\_4 \\
& X0 X1 X2 X3 X4 X5) (u1\_struct\_0 (k2\_group\_7 (k2\_tarski np\_1 np\_2) \\
& (k10\_finseq\_1 X0 X1)) (u1\_struct\_0 (k2\_group\_7 (k2\_tarski np\_1 \\
& np\_2) (k10\_finseq\_1 X2 X3))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v15\_algstr\_0 X0)\wedge((v2\_group\_1 X0)\wedge((v3\_group\_1 X0)\wedge(l3\_algstr\_0 X0))))))\wedge((\neg v2\_struct\_0 X1)\wedge((v15\_algstr\_0 X1)\wedge((v2\_group\_1 X1)\wedge((v3\_group\_1 X1)\wedge(l3\_algstr\_0 X1))))))\Rightarrow((r2\_group\_6 X0 X1)\Leftrightarrow(r1\_group\_6 X0 X1)) \quad (2)$$

Assume the following.

$$\forall X0.\forall X1.(v1\_relat\_1 (k10\_finseq\_1 X0 X1))\wedge(v1\_funct\_1 (k10\_finseq\_1 X0 X1)) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge((v1\_partfun1 X1 X0)\wedge((v1\_group\_7 X1)\wedge(v3\_group\_7 X1 X0))))))\Rightarrow((v15\_algstr\_0 (k2\_group\_7 X0 X1))\wedge(v3\_group\_1 (k2\_group\_7 X0 X1))) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge((v1\_partfun1 X1 X0)\wedge((v1\_group\_7 X1)\wedge(v2\_group\_7 X1 X0))))))\Rightarrow((v15\_algstr\_0 (k2\_group\_7 X0 X1))\wedge(v2\_group\_1 (k2\_group\_7 X0 X1))) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge((v1\_partfun1 X1 X0)\wedge(v1\_group\_7 X1))))))\Rightarrow(((\neg v2\_struct\_0 (k2\_group\_7 X0 X1))\wedge((v15\_algstr\_0 (k2\_group\_7 X0 X1))\wedge(v1\_monoid\_0 (k2\_group\_7 X0 X1)))) \quad (6)$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& (((\neg v2\_struct\_0 X0)\wedge((v2\_group\_1 X0)\wedge((v3\_group\_1 X0)\wedge(l3\_algstr\_0 \\
& X0))))\wedge(((\neg v2\_struct\_0 X1)\wedge((v2\_group\_1 X1)\wedge((v3\_group\_1 X1)\wedge \\
& (l3\_algstr\_0 X1))))\wedge(((\neg v2\_struct\_0 X2)\wedge((v2\_group\_1 X2)\wedge( \\
& (v3\_group\_1 X2)\wedge(l3\_algstr\_0 X2))))\wedge(((\neg v2\_struct\_0 X3)\wedge(( \\
& v2\_group\_1 X3)\wedge((v3\_group\_1 X3)\wedge(l3\_algstr\_0 X3))))\wedge(((v1\_funct\_1 \\
& X4)\wedge((v1\_funct\_2 X4 (u1\_struct\_0 X0) (u1\_struct\_0 X2))\wedge((v1\_group\_6 \\
& X4 X0 X2)\wedge(m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X2))))))\wedge(((v1\_funct\_1 X5)\wedge((v1\_funct\_2 X5 \\
& (u1\_struct\_0 X1) (u1\_struct\_0 X3))\wedge((v1\_group\_6 X5 X1 X3)\wedge(m1\_subset\_1 \\
& X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X3))))))))))\Rightarrow \\
& ((v1\_funct\_1 (k1\_topalg\_4 X0 X1 X2 X3 X4 X5))\wedge((v1\_funct\_2 (k1\_topalg\_4 \\
& X0 X1 X2 X3 X4 X5) (u1\_struct\_0 (k2\_group\_7 (k2\_tarski np\_1 np\_2) \\
& (k10\_finseq\_1 X0 X1))) (u1\_struct\_0 (k2\_group\_7 (k2\_tarski np\_1 \\
& np\_2) (k10\_finseq\_1 X2 X3))))\wedge(v1\_group\_6 (k1\_topalg\_4 X0 X1 \\
& X2 X3 X4 X5) (k2\_group\_7 (k2\_tarski np\_1 np\_2) (k10\_finseq\_1 X0 \\
& X1) (k2\_group\_7 (k2\_tarski np\_1 np\_2) (k10\_finseq\_1 X2 X3))))))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v3\_group\_1 X0)\wedge \\
& (l3\_algstr\_0 X0)))\wedge((\neg v2\_struct\_0 X1)\wedge((v3\_group\_1 X1)\wedge(l3\_algstr\_0 \\
& X1))))\Rightarrow(v3\_group\_7 (k10\_finseq\_1 X0 X1) (k2\_tarski np\_1 np\_2))
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v2\_group\_1 X0)\wedge \\
& (l3\_algstr\_0 X0)))\wedge((\neg v2\_struct\_0 X1)\wedge((v2\_group\_1 X1)\wedge(l3\_algstr\_0 \\
& X1))))\Rightarrow(v2\_group\_7 (k10\_finseq\_1 X0 X1) (k2\_tarski np\_1 np\_2))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge(l3\_algstr\_0 X0))\wedge \\
& ((\neg v2\_struct\_0 X1)\wedge(l3\_algstr\_0 X1)))\Rightarrow((v1\_partfun1 (k10\_finseq\_1 \\
& X0 X1) (k2\_tarski np\_1 np\_2))\wedge(v1\_group\_7 (k10\_finseq\_1 X0 X1)))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge(l3\_algstr\_0 X0))\wedge \\
& ((\neg v2\_struct\_0 X1)\wedge(l3\_algstr\_0 X1)))\Rightarrow(v4\_relat\_1 (k10\_finseq\_1 \\
& X0 X1) (k2\_tarski np\_1 np\_2))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\
& (v1\_funct\_1 X1)\wedge((v1\_partfun1 X1 X0)\wedge(v1\_group\_7 X1))))\Rightarrow(( \\
& v15\_algstr\_0 (k2\_group\_7 X0 X1)\wedge(l3\_algstr\_0 (k2\_group\_7 X0 \\
& X1)))
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& (((\neg v2\_struct\_0 X0) \wedge (l3\_algstr\_0 X0)) \wedge (((\neg v2\_struct\_0 X1) \wedge \\
& (l3\_algstr\_0 X1)) \wedge (((\neg v2\_struct\_0 X2) \wedge (l3\_algstr\_0 X2)) \wedge (( \\
& (\neg v2\_struct\_0 X3) \wedge (l3\_algstr\_0 X3)) \wedge ((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 \\
& X4 (u1\_struct\_0 X0) (u1\_struct\_0 X2)) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X2)))))) \wedge ((v1\_funct\_1 \\
& X5) \wedge ((v1\_funct\_2 X5 (u1\_struct\_0 X1) (u1\_struct\_0 X3)) \wedge (m1\_subset\_1 \\
& X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X3))))))))) \Rightarrow \\
& ((v1\_funct\_1 (k1\_topalg\_4 X0 X1 X2 X3 X4 X5)) \wedge ((v1\_funct\_2 (k1\_topalg\_4 \\
& X0 X1 X2 X3 X4 X5) (u1\_struct\_0 (k2\_group\_7 (k2\_tarski np\_1 np\_2) \\
& (k10\_finseq\_1 X0 X1))) (u1\_struct\_0 (k2\_group\_7 (k2\_tarski np\_1 \\
& np\_2) (k10\_finseq\_1 X2 X3)))) \wedge (m1\_subset\_1 (k1\_topalg\_4 X0 X1 \\
& X2 X3 X4 X5) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 (k2\_group\_7 \\
& (k2\_tarski np\_1 np\_2) (k10\_finseq\_1 X0 X1))) (u1\_struct\_0 (k2\_group\_7 \\
& (k2\_tarski np\_1 np\_2) (k10\_finseq\_1 X2 X3)))))))))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_group\_1 X0) \wedge ((v3\_group\_1 \\
& X0) \wedge (l3\_algstr\_0 X0)))) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v2\_group\_1 \\
& X1) \wedge ((v3\_group\_1 X1) \wedge (l3\_algstr\_0 X1)))) \Rightarrow ((r1\_group\_6 X0 X1) \Leftrightarrow \\
& (\exists X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) \\
& (u1\_struct\_0 X1)) \wedge ((v1\_group\_6 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \wedge (v3\_funct\_2 \\
& X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1))))))
\end{aligned} \tag{14}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_group\_1 X0) \wedge ((v3\_group\_1 \\
& X0) \wedge (l3\_algstr\_0 X0)))) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v2\_group\_1 \\
& X1) \wedge ((v3\_group\_1 X1) \wedge (l3\_algstr\_0 X1)))) \Rightarrow (\forall X2. ((\neg v2\_struct\_0 \\
& X2) \wedge ((v2\_group\_1 X2) \wedge ((v3\_group\_1 X2) \wedge (l3\_algstr\_0 X2)))) \Rightarrow \\
& (\forall X3. ((\neg v2\_struct\_0 X3) \wedge ((v2\_group\_1 X3) \wedge ((v3\_group\_1 \\
& X3) \wedge (l3\_algstr\_0 X3)))) \Rightarrow (((r1\_group\_6 X0 X2) \wedge (r1\_group\_6 X1 \\
& X3)) \Rightarrow (r2\_group\_6 (k2\_group\_7 (k2\_tarski np\_1 np\_2) (k10\_finseq\_1 \\
& X0 X1)) (k2\_group\_7 (k2\_tarski np\_1 np\_2) (k10\_finseq\_1 X2 X3))))))
\end{aligned}$$