

## t7\_topalg\_6

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $m1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $m1\_borsuk\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_borsuk\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_topmetr : \iota$  be given. Let  $k6\_eqrel\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_topalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_topalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r3\_borsuk\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
 & X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (m1\_pre\_topc X1 X0)) \Rightarrow ( \\
 & \forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 \\
 & X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\
 & X1)) \Rightarrow (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 X1)) \Rightarrow (\forall X6. \\
 & (m1\_borsuk\_2 X6 X0 X2 X3) \Rightarrow (\forall X7.(m1\_borsuk\_2 X7 X0 X2 X3) \Rightarrow \\
 & (\forall X8.(m1\_borsuk\_2 X8 X1 X4 X5) \Rightarrow (\forall X9.(m1\_borsuk\_2 \\
 & X9 X1 X4 X5) \Rightarrow (((r1\_borsuk\_6 X1 X4 X5) \wedge ((r1\_borsuk\_6 X0 X2 X3) \wedge (( \\
 & r1\_funct\_2 (u1\_struct\_0 k5\_topmetr) (u1\_struct\_0 X0) (u1\_struct\_0 \\
 & k5\_topmetr) (u1\_struct\_0 X1) X6 X8) \wedge ((r1\_funct\_2 (u1\_struct\_0 \\
 & k5\_topmetr) (u1\_struct\_0 X0) (u1\_struct\_0 k5\_topmetr) (u1\_struct\_0 \\
 & X1) X7 X9) \wedge (r3\_borsuk\_2 X1 X4 X5 X8 X9)))))) \Rightarrow (r3\_borsuk\_2 X0 X2 X3 \\
 & X6 X7))))))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
 & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
 & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((r1\_borsuk\_6 X0 X1 X2) \Rightarrow (\forall X3. \\
 & (m1\_borsuk\_2 X3 X0 X1 X2) \Rightarrow (\forall X4.(m1\_borsuk\_2 X4 X0 X1 X2) \Rightarrow \\
 & ((k6\_eqrel\_1 (k1\_topalg\_1 X0 X1 X2) (k1\_topalg\_1 X0 X1 X2) (k3\_topalg\_1 \\
 & X0 X1 X2) X3 = k6\_eqrel\_1 (k1\_topalg\_1 X0 X1 X2) (k1\_topalg\_1 X0 X1 \\
 & X2) (k3\_topalg\_1 X0 X1 X2) X4) \Leftrightarrow (r3\_borsuk\_2 X0 X1 X2 X3 X4))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\forall X1.(m1\_pre\_topc\ X1\ X0)\Rightarrow(l1\_pre\_topc\ X1)) \quad (3)$$

Assume the following.

$$\forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1.(m1\_pre\_topc\ X1\ X0)\Rightarrow(v2\_pre\_topc\ X1)) \quad (4)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0)))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge(m1\_pre\_topc\ X1\ X0))\Rightarrow( \\ & \forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X0))\Rightarrow(\forall X4.(m1\_subset\_1\ X4\ (u1\_struct\_0\ X1))\Rightarrow(\forall X5.(m1\_subset\_1\ X5\ (u1\_struct\_0\ X1))\Rightarrow(\forall X6. \\ & (m1\_borsuk\_2\ X6\ X0\ X2\ X3)\Rightarrow(\forall X7.(m1\_borsuk\_2\ X7\ X0\ X2\ X3)\Rightarrow \\ & (\forall X8.(m1\_borsuk\_2\ X8\ X1\ X4\ X5)\Rightarrow(\forall X9.(m1\_borsuk\_2\ X9\ X1\ X4\ X5)\Rightarrow(((r1\_borsuk\_6\ X1\ X4\ X5)\wedge((r1\_borsuk\_6\ X0\ X2\ X3)\wedge(( \\ & r1\_funct\_2\ (u1\_struct\_0\ k5\_topmetr)\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ k5\_topmetr)\ (u1\_struct\_0\ X1)\ X6\ X8)\wedge((r1\_funct\_2\ (u1\_struct\_0\ k5\_topmetr)\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ k5\_topmetr)\ (u1\_struct\_0\ X1)\ X7\ X9)\wedge(k6\_eqrel\_1\ (k1\_topalg\_1\ X1\ X4\ X5)\ (k1\_topalg\_1\ X1\ X4\ X5)\ (k3\_topalg\_1\ X1\ X4\ X5)\ X8 = k6\_eqrel\_1\ (k1\_topalg\_1\ X1\ X4\ X5)\ (k1\_topalg\_1\ X1\ X4\ X5)\ (k3\_topalg\_1\ X1\ X4\ X5)\ X9))))))\Rightarrow(k6\_eqrel\_1\ (k1\_topalg\_1\ X0\ X2\ X3)\ (k1\_topalg\_1\ X0\ X2\ X3)\ (k3\_topalg\_1\ X0\ X2\ X3)\ X6 = k6\_eqrel\_1\ (k1\_topalg\_1\ X0\ X2\ X3)\ (k1\_topalg\_1\ X0\ X2\ X3)\ (k3\_topalg\_1\ X0\ X2\ X3)\ (k3\_topalg\_1\ X0\ X2\ X3)\ X7)))))))))) \end{aligned}$$