

t45\_topgrp\_1  
(TMd7vEiQSF3r1ohPY1J7CtXj6KRMk65GCmG)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v2\_group\_1 : \iota \Rightarrow o$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  be given. Let  $v3\_topgrp\_1 : \iota \Rightarrow o$  be given. Let  $l1\_topgrp\_1 : \iota \Rightarrow o$  be given. Let  $m3\_topgrp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_group\_1 : \iota \Rightarrow \iota$  be given. Let  $l3\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  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  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $m2\_topgrp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_funct\_1 : \iota \Rightarrow \iota$  be given. Let  $v2\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v5\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_tops\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_tops\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_group\_1 X0) \wedge ((v3\_group\_1 \\ X0) \wedge (l3\_algstr\_0 X0)))) \Rightarrow (r2\_funct\_2 (u1\_struct\_0 X0) (u1\_struct\_0 \\ X0) (k2\_funct\_2 (u1\_struct\_0 X0) (k3\_group\_1 X0)) (k3\_group\_1 \\ X0)) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. \forall X3. (((v1\_funct\_1 X2) \wedge \\ ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ X0 X1)))))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 \\ X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow ((r2\_funct\_2 X0 X1 X2 \\ X3) \Leftrightarrow (X2 = X3)) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. (l1\_pre\_topc X0) \Rightarrow (\forall X1. (m3\_topgrp\_1 X1 X0) \Leftrightarrow (m2\_topgrp\_1 X1 X0)) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_funct\_1 X1)\wedge((v1\_funct\_2 X1 X0 X0)\wedge((v3\_funct\_2 X1 X0 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0))))))\Rightarrow(k2\_funct\_2 X0 X1 = k2\_funct\_1 X1) \quad (4)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v2\_group\_1 X0)\wedge((v3\_group\_1 X0)\wedge(l3\_algstr\_0 X0))))\Rightarrow((v1\_funct\_1 (k3\_group\_1 X0))\wedge((v2\_funct\_1 (k3\_group\_1 X0))\wedge((v1\_funct\_2 (k3\_group\_1 X0) (u1\_struct\_0 X0) (u1\_struct\_0 X0))\wedge(v2\_funct\_2 (k3\_group\_1 X0) (u1\_struct\_0 X0)))))) \quad (5)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge(l1\_struct\_0 X0))\Rightarrow(\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (6)$$

Assume the following.

$$v1\_xboole\_0 k1\_xboole\_0 \quad (7)$$

Assume the following.

$$\forall X0.(l3\_algstr\_0 X0)\Rightarrow(l1\_struct\_0 X0) \quad (8)$$

Assume the following.

$$\forall X0.(l1\_topgrp\_1 X0)\Rightarrow((l3\_algstr\_0 X0)\wedge(l1\_pre\_topc X0)) \quad (9)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v2\_group\_1 X0)\wedge((v3\_group\_1 X0)\wedge(l3\_algstr\_0 X0))))\Rightarrow((v1\_funct\_1 (k3\_group\_1 X0))\wedge((v1\_funct\_2 (k3\_group\_1 X0) (u1\_struct\_0 X0) (u1\_struct\_0 X0))\wedge(m1\_subset\_1 (k3\_group\_1 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)))))) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_funct\_1 X1)\wedge((v1\_funct\_2 X1 X0 X0)\wedge((v3\_funct\_2 X1 X0 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0))))))\Rightarrow((v1\_funct\_1 (k2\_funct\_2 X0 X1))\wedge((v1\_funct\_2 (k2\_funct\_2 X0 X1) X0 X0)\wedge((v3\_funct\_2 (k2\_funct\_2 X0 X1) X0 X0)\wedge(m1\_subset\_1 (k2\_funct\_2 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))))) \quad (11)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v2\_group\_1 X0)\wedge((v3\_group\_1 X0)\wedge(l1\_topgrp\_1 X0))))\Rightarrow((v3\_topgrp\_1 X0)\Leftrightarrow(v5\_pre\_topc (k3\_group\_1 X0) X0 X0)) \quad (12)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l1\_pre\_topc\ X0) \Rightarrow (\forall X1.(l1\_pre\_topc\ X1) \Rightarrow (\forall X2. \\
& ((v1\_funct\_1\ X2) \wedge ((v1\_funct\_2\ X2\ (u1\_struct\_0\ X0)\ (u1\_struct\_0 \\
& X1)) \wedge (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0 \\
& X0)\ (u1\_struct\_0\ X1)))))) \Rightarrow ((v3\_tops\_2\ X2\ X0\ X1) \Leftrightarrow ((k1\_relset\_1 \\
& (u1\_struct\_0\ X0)\ X2 = k2\_struct\_0\ X0) \wedge ((k2\_relset\_1\ (u1\_struct\_0 \\
& X1)\ X2 = k2\_struct\_0\ X1) \wedge ((v2\_funct\_1\ X2) \wedge ((v5\_pre\_topc\ X2\ X0\ X1) \wedge \\
& (v5\_pre\_topc\ (k2\_tops\_2\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1)\ X2) \\
& X1\ X0)))))))))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((v1\_funct\_1\ X2) \wedge ((v1\_funct\_2 \\
& X2\ X0\ X1) \wedge (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ X0\ X1)))))) \Rightarrow \\
& ((v3\_funct\_2\ X2\ X0\ X1) \Rightarrow (k2\_tops\_2\ X0\ X1\ X2 = k2\_funct\_1\ X2))
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l1\_pre\_topc\ X0) \Rightarrow (\forall X1.((v1\_funct\_1\ X1) \wedge (( \\
& v1\_funct\_2\ X1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X0)) \wedge (m1\_subset\_1 \\
& X1\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X0)))))) \Rightarrow \\
& ((m2\_topgrp\_1\ X1\ X0) \Leftrightarrow (v3\_tops\_2\ X1\ X0\ X0))
\end{aligned} \tag{15}$$

Assume the following.

$$\forall X0.(l1\_struct\_0\ X0) \Rightarrow (k2\_struct\_0\ X0 = u1\_struct\_0\ X0) \tag{16}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((v1\_relat\_1\ X1) \wedge (v5\_relat\_1\ X1\ X0)) \Rightarrow ( \\
& (v2\_funct\_2\ X1\ X0) \Leftrightarrow (k2\_relset\_1\ X0\ X1 = X0))
\end{aligned} \tag{17}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1\ X0\ X1))) \Rightarrow (((X1 \neq k1\_xboole\_0) \Rightarrow ((v1\_funct\_2\ X2\ X0 \\
& X1) \Leftrightarrow (X0 = k1\_relset\_1\ X0\ X2))) \wedge ((X1 = k1\_xboole\_0) \Rightarrow ((v1\_funct\_2 \\
& X2\ X0\ X1) \Leftrightarrow (X2 = k1\_xboole\_0))))
\end{aligned} \tag{18}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1\ X0\ X1))) \Rightarrow (((v1\_funct\_1\ X2) \wedge ((v2\_funct\_1\ X2) \wedge (v2\_funct\_2 \\
& X2\ X1))) \Rightarrow ((v1\_funct\_1\ X2) \wedge (v3\_funct\_2\ X2\ X0\ X1)))
\end{aligned} \tag{19}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1\ X0\ X1))) \Rightarrow ((v4\_relat\_1\ X2\ X0) \wedge (v5\_relat\_1\ X2\ X1))
\end{aligned} \tag{20}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))\Rightarrow(v1\_relat\_1 X2) \quad (21)$$

**Theorem 1**

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v2\_pre\_topc X0)\wedge((v2\_group\_1 X0)\wedge((v3\_group\_1 X0)\wedge((v3\_topgrp\_1 X0)\wedge(l1\_topgrp\_1 X0))))))\Rightarrow (m3\_topgrp\_1 (k3\_group\_1 X0) X0)$$