

## t30\_topdim\_1

(TMHKKDUK7WF9kTrLZNgiN4G85MDRXXHE6C2)

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Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  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  $k1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_topdim\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_topdim\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_topdim\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_topdim\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_int\_1 : \iota \Rightarrow o$  be given. Let  $k1\_real\_1 : \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $m1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. \forall X2. ((X0 \in X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 X2))) \Rightarrow (m1\_subset\_1 X0 X2) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 (k1\_pre\_topc X0 X1)))) \Rightarrow \\ & (((X3 = X2) \wedge (v1\_topdim\_1 X2 X0)) \Rightarrow ((v1\_topdim\_1 X3 (k1\_pre\_topc \\ & X0 X1)) \wedge (k2\_topdim\_1 (k1\_pre\_topc X0 X1) X3 = k2\_topdim\_1 X0 X2)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. (v1\_xxreal\_0 X0) \Rightarrow (\forall X1. (v1\_xxreal\_0 X1) \Rightarrow ((r1\_xxreal\_0 X0 X1) \wedge (r1\_xxreal\_0 X1 X0)) \Rightarrow (X0 = X1)) \quad (3)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1. \\
& (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow \\
& (\forall X2.(v1\_int\_1\ X2)\Rightarrow((((v2\_topdim\_1\ X1\ X0)\wedge(r1\_xxreal\_0 \\
& (k3\_topdim\_1\ X0\ X1)\ X2))\Rightarrow((r1\_xxreal\_0\ (k1\_real\_1\ np\_1)\ X2)\wedge \\
& (\forall X3.(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow \\
& ((X3\ \in\ X1)\Rightarrow((v1\_topdim\_1\ X3\ X0)\wedge(r1\_xxreal\_0\ (k2\_topdim\_1\ X0\ X3) \\
& X2))))))\wedge(((r1\_xxreal\_0\ (k1\_real\_1\ np\_1)\ X2)\wedge(\forall X3.( \\
& m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow((X3\ \in\ X1)\Rightarrow((v1\_topdim\_1 \\
& X3\ X0)\wedge(r1\_xxreal\_0\ (k2\_topdim\_1\ X0\ X3)\ X2))))))\Rightarrow((v2\_topdim\_1 \\
& X1\ X0)\wedge(r1\_xxreal\_0\ (k3\_topdim\_1\ X0\ X1)\ X2))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_xxreal\_0\ X0)\wedge(v1\_xxreal\_0\ X1))\Rightarrow( \tag{5} \\
r1\_xxreal\_0\ X0\ X0)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\exists X1. \\
& (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\wedge \tag{6} \\
& ((\neg v1\_xboole\_0\ X1)\wedge(v2\_topdim\_1\ X1\ X0))
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\wedge \\
& (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow((v1\_pre\_topc \tag{7} \\
& (k1\_pre\_topc\ X0\ X1))\wedge(v2\_pre\_topc\ (k1\_pre\_topc\ X0\ X1)))
\end{aligned}$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\forall X1.(m1\_pre\_topc\ X1\ X0)\Rightarrow \tag{8} \\
(l1\_pre\_topc\ X1))$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\wedge \\
& (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow \tag{9} \\
& (v1\_int\_1\ (k3\_topdim\_1\ X0\ X1))
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((l1\_pre\_topc\ X0)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\
& (u1\_struct\_0\ X0))))\Rightarrow((v1\_pre\_topc\ (k1\_pre\_topc\ X0\ X1))\wedge(m1\_pre\_topc \tag{10} \\
& (k1\_pre\_topc\ X0\ X1)\ X0))
\end{aligned}$$

Assume the following.

$$\forall X0.(v1\_xreal\_0\ X0)\Rightarrow(v1\_xxreal\_0\ X0) \tag{11}$$

Assume the following.

$$\forall X0.(v1\_int\_1\ X0)\Rightarrow(v1\_xreal\_0\ X0) \tag{12}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1. \\ & (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow(\forall X2. \\ & (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow \\ & (\forall X3.(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & (k1\_pre\_topc\ X0\ X1))))))\Rightarrow(((v2\_topdim\_1\ X2\ X0)\wedge(X3 = X2))\Rightarrow((v2\_topdim\_1 \\ & X3\ (k1\_pre\_topc\ X0\ X1))\wedge(k3\_topdim\_1\ X0\ X2 = k3\_topdim\_1\ (k1\_pre\_topc \\ & X0\ X1)\ X3)))))) \end{aligned}$$