

## t24\_msuhom\_1

(TMSn615qFXe98JGCn7cNjWNeiHZ6G9cb1Nq)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_unialg\_1 : \iota \Rightarrow o$  be given. Let  $v3\_unialg\_1 : \iota \Rightarrow o$  be given. Let  $v4\_unialg\_1 : \iota \Rightarrow o$  be given. Let  $l1\_unialg\_1 : \iota \Rightarrow o$  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  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_unialg\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r4\_msualg\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_msualg\_1 : \iota \Rightarrow \iota$  be given. Let  $k9\_msualg\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_msuhom\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_msuhom\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r4\_alg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r3\_msualg\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_alg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_msualg\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r3\_alg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v7\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_struct\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $v1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $v5\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $l5\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge ((l1\_unialg\_1 X0)))))) \Rightarrow (\forall X1. ((\neg \\
 & v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge ((v4\_unialg\_1 X1) \wedge ((l1\_unialg\_1 X1)))))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\
 & X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (((r1\_unialg\_2 \\
 & X0 X1) \wedge (r3\_msualg\_3 (k6\_msualg\_1 X0) (k9\_msualg\_1 X0) (k1\_msuhom\_1 (k6\_msualg\_1 X0) (k6\_msualg\_1 X1) (k9\_msualg\_1 X1)) (k2\_msuhom\_1 \\
 & X0 X1 X2))) \Rightarrow (r2\_alg\_1 X0 X1 X2)))
 \end{aligned}
 \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge ((v4\_unialg\_1 X1) \wedge (l1\_unialg\_1 X1)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (((r1\_unialg\_2 X0 X1) \wedge (r2\_msualg\_3 (k6\_msualg\_1 X0) (k9\_msualg\_1 X0) (k1\_msuhom\_1 (k6\_msualg\_1 X0) (k6\_msualg\_1 X1) (k9\_msualg\_1 X1)) (k2\_msuhom\_1 X0 X1 X2))) \Rightarrow (r3\_alg\_1 X0 X1 X2)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow ((v3\_msualg\_1 (k9\_msualg\_1 X0) (k6\_msualg\_1 X0)) \wedge (v4\_msualg\_1 (k9\_msualg\_1 X0) (k6\_msualg\_1 X0))) \quad (3)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow ((v7\_struct\_0 (k6\_msualg\_1 X0)) \wedge ((\neg v11\_struct\_0 (k6\_msualg\_1 X0)) \wedge ((v13\_struct\_0 (k6\_msualg\_1 X0) np\_1) \wedge ((v1\_msualg\_1 (k6\_msualg\_1 X0)) \wedge (v5\_msualg\_1 (k6\_msualg\_1 X0))))))) \quad (4)$$

Assume the following.

$$\forall X0.(l5\_struct\_0 X0) \Rightarrow (l1\_struct\_0 X0) \quad (5)$$

Assume the following.

$$\forall X0.(l1\_msualg\_1 X0) \Rightarrow (l5\_struct\_0 X0) \quad (6)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow ((v3\_msualg\_1 (k9\_msualg\_1 X0) (k6\_msualg\_1 X0)) \wedge (l3\_msualg\_1 (k9\_msualg\_1 X0) (k6\_msualg\_1 X0))) \quad (7)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow ((v7\_struct\_0 (k6\_msualg\_1 X0)) \wedge ((\neg v11\_struct\_0 (k6\_msualg\_1 X0)) \wedge ((v1\_msualg\_1 (k6\_msualg\_1 X0)) \wedge ((v5\_msualg\_1 (k6\_msualg\_1 X0)) \wedge (l1\_msualg\_1 (k6\_msualg\_1 X0))))))) \quad (8)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 \\
& X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \wedge \\
& (((\neg v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge (( \\
& v4\_unialg\_1 X1) \wedge (l1\_unialg\_1 X1)))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\
& X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (m2\_pboole \\
& (k2\_msuhom\_1 X0 X1 X2) (u1\_struct\_0 (k6\_msualg\_1 X0)) (u3\_msualg\_1 \\
& (k6\_msualg\_1 X0) (k9\_msualg\_1 X0)) (u3\_msualg\_1 (k6\_msualg\_1 \\
& X0) (k1\_msuhom\_1 (k6\_msualg\_1 X0) (k6\_msualg\_1 X1) (k9\_msualg\_1 \\
& X1))))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 \\
& X0) \wedge ((v1\_msualg\_1 X0) \wedge (l1\_msualg\_1 X0)))) \wedge (((\neg v2\_struct\_0 \\
& X1) \wedge ((\neg v11\_struct\_0 X1) \wedge ((v1\_msualg\_1 X1) \wedge (l1\_msualg\_1 X1)))) \wedge \\
& ((v3\_msualg\_1 X2 X1) \wedge ((v4\_msualg\_1 X2 X1) \wedge (l3\_msualg\_1 X2 X1)))) \Rightarrow \\
& ((v3\_msualg\_1 (k1\_msuhom\_1 X0 X1 X2) X0) \wedge ((v4\_msualg\_1 (k1\_msuhom\_1 \\
& X0 X1 X2) X0) \wedge (l3\_msualg\_1 (k1\_msuhom\_1 X0 X1 X2) X0)))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0. (((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 \\
& X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow (\forall X1. ((\neg \\
& v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge ((v4\_unialg\_1 \\
& X1) \wedge (l1\_unialg\_1 X1)))))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\
& X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow ((r4\_alg\_1 \\
& X0 X1 X2) \Leftrightarrow ((r2\_alg\_1 X0 X1 X2) \wedge (r3\_alg\_1 X0 X1 X2))))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0. (((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\
& X0))) \Rightarrow (\forall X1. (l3\_msualg\_1 X1 X0) \Rightarrow (\forall X2. (l3\_msualg\_1 \\
& X2 X0) \Rightarrow (\forall X3. (m2\_pboole X3 (u1\_struct\_0 X0) (u3\_msualg\_1 \\
& X0 X1) (u3\_msualg\_1 X0 X2) \Rightarrow ((r4\_msualg\_3 X0 X1 X2 X3) \Leftrightarrow ((r2\_msualg\_3 \\
& X0 X1 X2 X3) \wedge (r3\_msualg\_3 X0 X1 X2 X3))))))
\end{aligned} \tag{12}$$

Assume the following.

$$\forall X0. (l1\_struct\_0 X0) \Rightarrow ((v13\_struct\_0 X0 \text{ np\_}1) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge (v7\_struct\_0 X0))) \tag{13}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 \\ & \quad X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow (\forall X1.((\neg \\ & v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge ((v4\_unialg\_1 \\ & \quad X1) \wedge (l1\_unialg\_1 X1)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & \quad (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (((r1\_unialg\_2 \\ & X0 X1) \wedge (r4\_msualg\_3 (k6\_msualg\_1 X0) (k9\_msualg\_1 X0) (k1\_msuhom\_1 \\ & \quad (k6\_msualg\_1 X0) (k6\_msualg\_1 X1) (k9\_msualg\_1 X1)) (k2\_msuhom\_1 \\ & \quad X0 X1 X2))) \Rightarrow (r4\_alg\_1 X0 X1 X2)))) \end{aligned}$$