

## t23\_msuhom\_1

(TMP7eGvxS5XXx5TFACvnJpj1Adh3FebiK7b)

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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  $r3\_msualg\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_msualg\_1 : \iota \Rightarrow \iota$  be given. Let  $k9\_msualg\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_msuhom\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_msuhom\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_alg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  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  $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k16\_funcop\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_msualg\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_alg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_funcop\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_funcop\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $v7\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_struct\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $v5\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $l5\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $k7\_msualg\_1 : \iota \Rightarrow \iota$  be given. Let  $v2\_relat\_1 : \iota \Rightarrow o$  be given. Let  $m2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_msualg\_3 : \iota \Rightarrow o$  be given. Let  $v2\_funct\_1 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v1\_msualg\_1 \\ X0) \wedge (l1\_msualg\_1 X0)))) \Rightarrow (\forall X1. ((v3\_msualg\_1 X1 X0) \wedge (( \\ v4\_msualg\_1 X1 X0) \wedge (l3\_msualg\_1 X1 X0))) \Rightarrow (X1 = k1\_msuhom\_1 X0 X0 \\ X1)) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. k1\_funct\_1 (k16\_funcop\_1 X0 X1) X0 = X1 \tag{2}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge ((v4\_unialg\_1 X1) \wedge (l1\_unialg\_1 X1)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow ((r1\_unialg\_2 X0 X1) \wedge (r1\_msualg\_3 (k6\_msualg\_1 X0) (k9\_msualg\_1 X0) (k1\_msuhom\_1 (k6\_msualg\_1 X0) (k6\_msualg\_1 X1) (k9\_msualg\_1 X1)) (k2\_msuhom\_1 X0 X1 X2))) \Rightarrow (r1\_alg\_1 X0 X1 X2)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge ((v4\_unialg\_1 X1) \wedge (l1\_unialg\_1 X1)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow ((r1\_unialg\_2 X0 X1) \Rightarrow ((v1\_relat\_1 (k2\_msuhom\_1 X0 X1 X2)) \wedge ((v4\_relat\_1 (k2\_msuhom\_1 X0 X1 X2) (k1\_tarski k6\_numbers)) \wedge ((v1\_funct\_1 (k2\_msuhom\_1 X0 X1 X2)) \wedge (v1\_partfun1 (k2\_msuhom\_1 X0 X1 X2) (k1\_tarski k6\_numbers)))))))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge ((v4\_unialg\_1 X1) \wedge (l1\_unialg\_1 X1)))))) \Rightarrow ((r1\_unialg\_2 X0 X1) \Rightarrow (k6\_msualg\_1 X0 = k6\_msualg\_1 X1))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. k7\_funcop\_1 X0 X1 = k2\_funcop\_1 X0 X1 \quad (6)$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \quad (7)$$

Assume the following.

$$\forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge (v4\_relat\_1 X1 X0)) \Rightarrow (k1\_relset\_1 X0 X1 = k9\_xtuple\_0 X1) \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow ((v3\_msualg\_1 (k9\_msualg\_1 X0) (k6\_msualg\_1 X0)) \wedge (v4\_msualg\_1 (k9\_msualg\_1 X0) (k6\_msualg\_1 X0))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 \\ X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow ((v7\_struct\_0 ( \\ k6\_msualg\_1 X0)) \wedge ((\neg v11\_struct\_0 (k6\_msualg\_1 X0)) \wedge ((v13\_struct\_0 \\ (k6\_msualg\_1 X0) np\_1) \wedge ((v1\_msualg\_1 (k6\_msualg\_1 X0)) \wedge (v5\_msualg\_1 \\ (k6\_msualg\_1 X0))))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. (v1\_relat\_1 (k2\_funcop\_1 X0 X1)) \wedge ((v4\_relat\_1 \\ (k2\_funcop\_1 X0 X1) X0) \wedge ((v1\_funct\_1 (k2\_funcop\_1 X0 X1)) \wedge (v1\_partfun1 \\ (k2\_funcop\_1 X0 X1) X0))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0. (l5\_struct\_0 X0) \Rightarrow (l1\_struct\_0 X0) \quad (12)$$

Assume the following.

$$\forall X0. (l1\_msualg\_1 X0) \Rightarrow (l5\_struct\_0 X0) \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 \\ X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow ((v3\_msualg\_1 ( \\ k9\_msualg\_1 X0) (k6\_msualg\_1 X0)) \wedge (l3\_msualg\_1 (k9\_msualg\_1 \\ X0) (k6\_msualg\_1 X0))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 \\ X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow ((v1\_relat\_1 (k7\_msualg\_1 \\ X0)) \wedge ((v2\_relat\_1 (k7\_msualg\_1 X0)) \wedge ((v4\_relat\_1 (k7\_msualg\_1 \\ X0) (u1\_struct\_0 (k6\_msualg\_1 X0))) \wedge ((v1\_funct\_1 (k7\_msualg\_1 \\ X0)) \wedge (v1\_partfun1 (k7\_msualg\_1 X0) (u1\_struct\_0 (k6\_msualg\_1 \\ X0))))))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 \\ X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow ((v7\_struct\_0 ( \\ k6\_msualg\_1 X0)) \wedge ((\neg v11\_struct\_0 (k6\_msualg\_1 X0)) \wedge ((v1\_msualg\_1 \\ (k6\_msualg\_1 X0)) \wedge ((v5\_msualg\_1 (k6\_msualg\_1 X0)) \wedge (l1\_msualg\_1 \\ (k6\_msualg\_1 X0))))))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 \\
& X0) \wedge ((v3\_unialg\_1 X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \wedge \\
& (((\neg v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge (( \\
& v4\_unialg\_1 X1) \wedge (l1\_unialg\_1 X1)))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\
& X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (m2\_pboole \\
& (k2\_msuhom\_1 X0 X1 X2) (u1\_struct\_0 (k6\_msualg\_1 X0)) (u3\_msualg\_1 \\
& (k6\_msualg\_1 X0) (k9\_msualg\_1 X0)) (u3\_msualg\_1 (k6\_msualg\_1 \\
& X0) (k1\_msuhom\_1 (k6\_msualg\_1 X0) (k6\_msualg\_1 X1) (k9\_msualg\_1 \\
& X1))))
\end{aligned} \tag{17}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\
& X0))) \Rightarrow (\forall X1. (l3\_msualg\_1 X1 X0) \Rightarrow (\forall X2. (l3\_msualg\_1 \\
& X2 X0) \Rightarrow (\forall X3. (m2\_pboole X3 (u1\_struct\_0 X0) (u3\_msualg\_1 \\
& X0 X1) (u3\_msualg\_1 X0 X2)) \Rightarrow ((r3\_msualg\_3 X0 X1 X2 X3) \Leftrightarrow ((r1\_msualg\_3 \\
& X0 X1 X2 X3) \wedge (v1\_msualg\_3 X3))))))
\end{aligned} \tag{18}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 \\
& X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow (k7\_msualg\_1 X0 = \\
& k16\_funcop\_1 k6\_numbers (u1\_struct\_0 X0))
\end{aligned} \tag{19}$$

Assume the following.

$$\forall X0. \forall X1. k16\_funcop\_1 X0 X1 = k7\_funcop\_1 (k1\_tarski X0) X1 \tag{20}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 \\
& X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow (\forall X1. ((\neg \\
& v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge ((v4\_unialg\_1 \\
& X1) \wedge (l1\_unialg\_1 X1)))))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\
& X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow ((k6\_msualg\_1 \\
& X0 = k6\_msualg\_1 X1) \Rightarrow (k2\_msuhom\_1 X0 X1 X2 = k16\_funcop\_1 k6\_numbers \\
& X2))))
\end{aligned} \tag{21}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge (v4\_relat\_1 X1 X0)) \Rightarrow ( \\
& (v1\_partfun1 X1 X0) \Leftrightarrow (k1\_relset\_1 X0 X1 = X0))
\end{aligned} \tag{22}$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow ((v1\_msualg\_3 \\ & X0) \Leftrightarrow (\forall X1. \forall X2. ((v1\_relat\_1 X2) \wedge (v1\_funct\_1 X2)) \Rightarrow \\ & ((X1 \in k9\_xtuple\_0 X0) \wedge (k1\_funct\_1 X0 X1 = X2)) \Rightarrow (v2\_funct\_1 X2)))) \end{aligned} \quad (23)$$

Assume the following.

$$\forall X0. \forall X1. k2\_funcop\_1 X0 X1 = k2\_zfmisc\_1 X0 (k1\_tarSKI X1) \quad (24)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_unialg\_1 X0) \wedge ((v3\_unialg\_1 \\ & X0) \wedge ((v4\_unialg\_1 X0) \wedge (l1\_unialg\_1 X0)))))) \Rightarrow (\forall X1. ((\neg \\ & v2\_struct\_0 X1) \wedge ((v2\_unialg\_1 X1) \wedge ((v3\_unialg\_1 X1) \wedge ((v4\_unialg\_1 \\ & X1) \wedge (l1\_unialg\_1 X1)))))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow ((r2\_alg\_1 \\ & X0 X1 X2) \Leftrightarrow ((r1\_alg\_1 X0 X1 X2) \wedge (v2\_funct\_1 X2)))))) \end{aligned} \quad (25)$$

Assume the following.

$$\forall X0. \forall X1. (X1 = k1\_tarSKI X0) \Leftrightarrow (\forall X2. (X2 \in X1) \Leftrightarrow (X2 = X0)) \quad (26)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))) \Rightarrow (v1\_relat\_1 X2) \quad (27)$$

Assume the following.

$$\forall X0. (l1\_struct\_0 X0) \Rightarrow ((v13\_struct\_0 X0 np\_1) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge (v7\_struct\_0 X0))) \quad (28)$$

### Theorem 1

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