

# t51\_msualg\_6

## (TMW6oqzMBWP9AhBZudJj27udwv3pXXfqW37)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v2\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_msualg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_msualg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_rewrite1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_msualg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v8\_relat\_2 : \iota \Rightarrow o$  be given. Let  $r1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & \quad X0 X0))) \Rightarrow (\forall X2. ((v1\_partfun1 X2 X0) \wedge ((v3\_relat\_2 X2) \wedge ( \\ & \quad (v8\_relat\_2 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 \\ & \quad X0)))))) \Rightarrow ((r1\_relset\_1 X0 X0 X1 X2) \Rightarrow (\forall X3. \forall X4. (( \\ & \quad X3 \in X0) \wedge (r2\_rewrite1 X1 X3 X4)) \Rightarrow (k4\_tarski X3 X4 \in X2)))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. (m1\_subset\_1 X2 ( \\ & \quad k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))) \Rightarrow ((r1\_relset\_1 X0 X1 X2 X3) \Leftrightarrow ( \\ & \quad r1\_tarski X2 X3)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. ((\neg v1\_xboole\_0 \\ & X0) \wedge (((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge \\ & (v1\_partfun1 X1 X0)))) \wedge (((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 X0) \wedge \\ & ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \wedge ((m1\_msualg\_4 X3 X0 X1 \\ & X2) \wedge (m1\_subset\_1 X4 X0)))) \Rightarrow (k1\_msualg\_4 X0 X1 X2 X3 X4 = k1\_funct\_1 \\ & X3 X4) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X0) \wedge (((v1\_relat\_1 \\ & X1) \wedge ((v2\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge ( \\ & v1\_partfun1 X1 X0)))) \wedge (m1\_subset\_1 X2 X0))) \Rightarrow (\neg v1\_xboole\_0 ( \\ & k1\_funct\_1 X1 X2)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\ & X1 X0) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0)))) \wedge ((v1\_relat\_1 \\ & X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow \\ & (\forall X3. (m1\_msualg\_4 X3 X0 X1 X2) \Rightarrow ((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 \\ & X3 X0) \wedge ((v1\_funct\_1 X3) \wedge (v1\_partfun1 X3 X0)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. ((\neg v1\_xboole\_0 \\ & X0) \wedge (((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge \\ & (v1\_partfun1 X1 X0)))) \wedge (((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 X0) \wedge \\ & ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \wedge ((m1\_msualg\_4 X3 X0 X1 \\ & X2) \wedge (m1\_subset\_1 X4 X0)))) \Rightarrow (m1\_subset\_1 (k1\_msualg\_4 X0 X1 X2 \\ & X3 X4) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k1\_funct\_1 X1 X4) (k1\_funct\_1 \\ & X2 X4)))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0. \forall X1. k4\_tarski X0 X1 = k2\_tarski (k2\_tarski X0 X1) (k1\_tarski X0) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge ( \\ & (v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0)))) \Rightarrow (\forall X2. ((v1\_relat\_1 \\ & X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow \\ & ((r2\_pboole X0 X1 X2) \Leftrightarrow (\forall X3. (X3 \in X0) \Rightarrow (r1\_tarski (k1\_funct\_1 \\ & X1 X3) (k1\_funct\_1 X2 X3)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_relat\_1 \ X1) \wedge ((v4\_relat\_1 \ X1 \ X0) \wedge \\
& (v1\_funct\_1 \ X1) \wedge (v1\_partfun1 \ X1 \ X0))) \Rightarrow (\forall X2. (m1\_msualg\_4 \\
& X2 \ X0 \ X1 \ X1) \Rightarrow ((v1\_msualg\_4 \ X2 \ X0 \ X1) \Leftrightarrow (\forall X3. \forall X4. (m1\_subset\_1 \\
& X4 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ (k1\_funct\_1 \ X1 \ X3) \ (k1\_funct\_1 \ X1 \\
& X3)))) \Rightarrow (((X3 \in X0) \wedge (k1\_funct\_1 \ X2 \ X3 = X4)) \Rightarrow ((v3\_relat\_2 \ X4) \wedge \\
& (v8\_relat\_2 \ X4) \wedge ((v1\_partfun1 \ X4 \ (k1\_funct\_1 \ X1 \ X3)) \wedge (m1\_subset\_1 \\
& X4 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ (k1\_funct\_1 \ X1 \ X3) \ (k1\_funct\_1 \ X1 \\
& X3))))))))))
\end{aligned} \tag{10}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0. (\neg v1\_xboole\_0 \ X0) \Rightarrow (\forall X1. ((v1\_relat\_1 \ X1) \wedge \\
& (v2\_relat\_1 \ X1) \wedge ((v4\_relat\_1 \ X1 \ X0) \wedge ((v1\_funct\_1 \ X1) \wedge (v1\_partfun1 \\
& X1 \ X0)))) \Rightarrow (\forall X2. (m1\_msualg\_4 \ X2 \ X0 \ X1 \ X1) \Rightarrow (\forall X3. ( \\
& (v1\_msualg\_4 \ X3 \ X0 \ X1) \wedge (m1\_msualg\_4 \ X3 \ X0 \ X1 \ X1)) \Rightarrow ((r2\_pboole \ X0 \\
& X2 \ X3) \Rightarrow (\forall X4. (m1\_subset\_1 \ X4 \ X0) \Rightarrow (\forall X5. (m1\_subset\_1 \\
& X5 \ (k1\_funct\_1 \ X1 \ X4)) \Rightarrow (\forall X6. (m1\_subset\_1 \ X6 \ (k1\_funct\_1 \\
& X1 \ X4)) \Rightarrow ((r2\_rewrite1 \ (k1\_msualg\_4 \ X0 \ X1 \ X1 \ X2 \ X4) \ X5 \ X6) \Rightarrow (k4\_tarski \\
& X5 \ X6 \in k1\_msualg\_4 \ X0 \ X1 \ X1 \ X3 \ X4))))))))))
\end{aligned}$$