

t42\_msualg\_6  
(TMPTagN9Qh5o288jpS8oaXwCnKiiZMfo9ZE)

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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  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_msualg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_msualg\_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_rewrite1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_msualg\_5 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_msualg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v8\_relat\_2 : \iota \Rightarrow o$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & \quad (k2\_zfmisc\_1 X0 X0))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 X0) \Rightarrow (\forall X3. \\ & (m1\_subset\_1 X3 X0) \Rightarrow ((k4\_tarski X2 X3 \in k1\_msualg\_5 X0 X1) \Leftrightarrow (r2\_rewrite1 \\ & \quad X1 X2 X3)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((m1\_subset\_1 X2 \\ & (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1)))) \Rightarrow ((r2\_relset\_1 X0 X1 X2 X3) \Leftrightarrow (X2 = X3)) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1\_xboole\_0 \\ & X0) \wedge (((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge \\ & (v1\_partfun1 X1 X0)))) \wedge (((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 X0) \wedge \\ & (v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \wedge ((m1\_msualg\_4 X3 X0 X1 \\ & X2) \wedge (m1\_subset\_1 X4 X0)))) \Rightarrow (k1\_msualg\_4 X0 X1 X2 X3 X4 = k1\_funct\_1 \\ & \quad X3 X4) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge(((v1\_relat\_1 X1)\wedge((v2\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))))\wedge(m1\_subset\_1 X2 X0)))\Rightarrow(\neg v1\_xboole\_0 (k1\_funct\_1 X1 X2)) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge(m1\_msualg\_4 X2 X0 X1 X1)))\Rightarrow((v1\_msualg\_4 (k3\_msualg\_5 X0 X1 X2) X0 X1)\wedge(m1\_msualg\_4 (k3\_msualg\_5 X0 X1 X2) X0 X1 X1)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))\Rightarrow((v1\_partfun1 (k1\_msualg\_5 X0 X1) X0)\wedge((v3\_relat\_2 (k1\_msualg\_5 X0 X1)\wedge((v8\_relat\_2 (k1\_msualg\_5 X0 X1)\wedge(m1\_subset\_1 (k1\_msualg\_5 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0))))))) \quad (6)$$

Assume the following.

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

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.

$$\forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow((\forall X2.(m1\_msualg\_4 X2 X0 X1 X1)\Rightarrow(\forall X3.((v1\_msualg\_4 X3 X0 X1)\wedge(m1\_msualg\_4 X3 X0 X1 X1))\Rightarrow((X3 = k3\_msualg\_5 X0 X1 X2)\Leftrightarrow(\forall X4.(m1\_subset\_1 X4 X0)\Rightarrow(r2\_relset\_1 (k1\_funct\_1 X1 X4) (k1\_funct\_1 X1 X4) (k1\_msualg\_4 X0 X1 X1 X3 X4) (k1\_msualg\_5 (k1\_funct\_1 X1 X4) (k1\_msualg\_4 X0 X1 X1 X2 X4)))))))) \quad (9)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge (v2\_relat\_1 X1) \wedge (v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 \\ X1 X0)))) \Rightarrow (\forall X2.(m1\_msualg\_4 X2 X0 X1 X1) \Rightarrow (\forall X3.( \\ m1\_subset\_1 X3 X0) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (k1\_funct\_1 X1 \\ X3) \Rightarrow (\forall X5.(m1\_subset\_1 X5 (k1\_funct\_1 X1 X3) \Rightarrow ((k4\_tarski \\ X4 X5 \in k1\_msualg\_4 X0 X1 X1 (k3\_msualg\_5 X0 X1 X2) X3) \Leftrightarrow (r2\_rewrite1 \\ (k1\_msualg\_4 X0 X1 X1 X2 X3) X4 X5)))))))) \end{aligned}$$