t25_autalg_1 (TMPDQeZb-VCJD7Yj4caubmsUYAXuFUPgqPCz)

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Let $v2\_struct\_0 : \iota \Rightarrow o$ be given. Let $v11\_struct\_0 : \iota \Rightarrow o$ be given. Let $l1\_msualg\_1 : \iota \Rightarrow o$ 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 $m1\_autalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5\_autalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_msualg\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1\_xboole\_0 : \iota \Rightarrow o$ be given. Let $m2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r4\_msualg\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r8\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1\_relat\_1 : \iota \Rightarrow o$ be given. Let $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1\_funct\_1 : \iota \Rightarrow o$ be given. Let $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1\_zfmisc\_1 : \iota \Rightarrow \iota$ be given. Let $k4\_autalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1\_struct\_0 : \iota \Rightarrow o$ be given. Let $l2\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l5\_struct\_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1\ X0\ X1) \Rightarrow ((v1\_xboole\_0\ X1) \vee (X0 \in X1)) \tag{1}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge (l1\_msualg\_1\ X0))) \Rightarrow (\forall X1.((v4\_msualg\_1\ X1\ X0) \wedge (l3\_msualg\_1\ X1\ X0)) \Rightarrow (\forall X2.((v4\_msualg\_1\ X2\ X0) \wedge (l3\_msualg\_1\ X2\ X0)) \Rightarrow (\forall X3.(m2\_pboole\ X3\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1)\ (u3\_msualg\_1\ X0\ X2)) \Rightarrow (\forall X4.(m2\_pboole\ X4\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X2)\ (u3\_msualg\_1\ X0\ X1)) \Rightarrow (((r4\_msualg\_3\ X0\ X1\ X2\ X3) \wedge (r8\_pboole\ (u1\_struct\_0\ X0)\ X4\ (k4\_msualg\_3\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1)\ (u3\_msualg\_1\ X0\ X2)\ X3))) \Rightarrow (r4\_msualg\_3\ X0\ X2\ X1\ X4)))))) \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0\ X0) \wedge (((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_partfun1\ X1\ X0)))) \wedge ((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge (v1\_partfun1\ X2\ X0)))))) \Rightarrow ((r8\_pboole\ X0\ X1\ X2) \Leftrightarrow (X1 = X2)) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((\neg v1\_xboole\_0\ X2)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k4\_autalg\_1\ X0\ X1\ X1)))))\Rightarrow(\forall X3.(m1\_autalg\_1\ X3\ X0\ X1\ X2)\Leftrightarrow(m1\_subset\_1\ X3\ X2)) \tag{4}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_struct\_0\ X0))\Rightarrow(\neg v1\_xboole\_0\ (u1\_struct\_0\ X0)) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.((l1\_struct\_0\ X0)\wedge(l2\_msualg\_1\ X1\ X0))\Rightarrow((v1\_relat\_1\ (u3\_msualg\_1\ X0\ X1))\wedge((v4\_relat\_1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0))\wedge((v1\_funct\_1\ (u3\_msualg\_1\ X0\ X1))\wedge(v1\_partfun1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0))))) \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow(\forall X3.(m2\_pboole\ X3\ X0\ X1\ X2)\Rightarrow((v1\_relat\_1\ X3)\wedge((v4\_relat\_1\ X3\ X0)\wedge((v1\_funct\_1\ X3)\wedge(v1\_partfun1\ X3\ X0))))) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((\neg v1\_xboole\_0\ X2)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k4\_autalg\_1\ X0\ X1\ X1)))))\Rightarrow(\forall X3.(m1\_autalg\_1\ X3\ X0\ X1\ X2)\Rightarrow(m2\_pboole\ X3\ X0\ X1\ X1)) \tag{8}$$

Assume the following.

$$\forall X0.(l5\_struct\_0\ X0)\Rightarrow(l1\_struct\_0\ X0) \tag{9}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\Rightarrow(\forall X1.(l3\_msualg\_1\ X1\ X0)\Rightarrow(l2\_msualg\_1\ X1\ X0)) \tag{10}$$

Assume the following.

$$\forall X0.(l1\_msualg\_1\ X0)\Rightarrow(l5\_struct\_0\ X0) \tag{11}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\wedge((v4\_msualg\_1\ X1\ X0)\wedge(l3\_msualg\_1\ X1\ X0)))\Rightarrow((\neg v1\_xboole\_0\ (k5\_autalg\_1\ X0\ X1))\wedge(m1\_subset\_1\ (k5\_autalg\_1\ X0\ X1)\ (k1\_zfmisc\_1\ (k4\_autalg\_1\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1)\ (u3\_msualg\_1\ X0\ X1))))) \tag{12}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(((v1\_relat\_1\ X1)\wedge ((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge (((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))\wedge(m2\_pboole\ X3\ X0\ X1\ X2)))\Rightarrow(m2\_pboole\ (k4\_msualg\_3\ X0\ X1\ X2\ X3)\ X0\ X2\ X1) \tag{13}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\Rightarrow(\forall X1.((v4\_msualg\_1\ X1\ X0)\wedge(l3\_msualg\_1\ X1\ X0))\Rightarrow(\forall X2.((\neg v1\_xboole\_0\ X2)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k4\_autalg\_1\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1)\ (u3\_msualg\_1\ X0\ X1)))))\Rightarrow((X2 = k5\_autalg\_1\ X0\ X1)\Leftrightarrow(\forall X3.(m2\_pboole\ X3\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1)\ (u3\_msualg\_1\ X0\ X1))\Rightarrow((X3 \in X2)\Leftrightarrow(r4\_msualg\_3\ X0\ X1\ X1\ X3)))))) \tag{14}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\Rightarrow(\forall X1.((v4\_msualg\_1\ X1\ X0)\wedge(l3\_msualg\_1\ X1\ X0))\Rightarrow(\forall X2.(m1\_autalg\_1\ X2\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1)\ (k5\_autalg\_1\ X0\ X1))\Rightarrow(k4\_msualg\_3\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1)\ (u3\_msualg\_1\ X0\ X1)\ X2 \in k5\_autalg\_1\ X0\ X1)))$$