t25_msualg_2 (TMRq7kepAZ8wbo5w5ooH4GAjy7rSVL2EYCH)

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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 $m1\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m3\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r8\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k13\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k12\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $r2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r6\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1\_xboole\_0 : \iota \Rightarrow o$ 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. Let $v3\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $u4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge (l1\_msualg\_1\ X0))) \Rightarrow (\forall X1.((v4\_msualg\_1\ X1\ X0) \wedge (l3\_msualg\_1\ X1\ X0)) \Rightarrow (\forall X2.(m1\_msualg\_2\ X2\ X0\ X1) \Rightarrow (\forall X3.(m3\_pboole\ X3\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1)) \Rightarrow (\forall X4.(m3\_pboole\ X4\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1)) \Rightarrow ((r8\_pboole\ (u1\_struct\_0\ X0)\ X4\ (k2\_pboole\ (u1\_struct\_0\ X0)\ X3\ (u3\_msualg\_1\ X0\ X2))) \Rightarrow (k13\_msualg\_2\ X0\ X1\ (k12\_msualg\_2\ X0\ X1\ X3)\ X2 = k12\_msualg\_2\ X0\ X1\ X4))))))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_partfun1\ X1\ X0)))) \Rightarrow (\forall X2.((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge (v1\_partfun1\ X2\ X0)))) \Rightarrow ((r2\_pboole\ X0\ X1\ X2) \Rightarrow (r6\_pboole\ X0\ (k2\_pboole\ X0\ X1\ X2)\ X2))) \tag{2}$$

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.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow((r6\_pboole\ X0\ X1\ X2)\Leftrightarrow(X1 = X2)) \tag{4}$$

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.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.(m3\_pboole\ X2\ X0\ X1)\Rightarrow((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\wedge(l3\_msualg\_1\ X1\ X0))\Rightarrow(\forall X2.(m1\_msualg\_2\ X2\ X0\ X1)\Rightarrow(l3\_msualg\_1\ X2\ X0)) \tag{8}$$

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.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow((v1\_relat\_1\ (k2\_pboole\ X0\ X1\ X2))\wedge((v4\_relat\_1\ (k2\_pboole\ X0\ X1\ X2)\ X0)\wedge((v1\_funct\_1\ (k2\_pboole\ X0\ X1\ X2))\wedge(v1\_partfun1\ (k2\_pboole\ X0\ X1\ X2)\ X0))))) \tag{12}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\Rightarrow(\forall X1.(l3\_msualg\_1\ X1\ X0)\Rightarrow(\forall X2.(l3\_msualg\_1\ X2\ X0)\Rightarrow((m1\_msualg\_2\ X2\ X0\ X1)\Leftrightarrow((m3\_pboole\ (u3\_msualg\_1\ X0\ X2)\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1))\wedge(\forall X3.(m3\_pboole\ X3\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1))\Rightarrow((r8\_pboole\ (u1\_struct\_0\ X0)\ X3\ (u3\_msualg\_1\ X0\ X2))\Rightarrow((v3\_msualg\_2\ X3\ X0\ X1)\wedge(r8\_pboole\ (u4\_struct\_0\ X0)\ (u4\_msualg\_1\ X0\ X2)\ (k4\_msualg\_2\ X0\ X1\ X3)))))))))) \tag{13}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))\Rightarrow((m3\_pboole\ X2\ X0\ X1)\Leftrightarrow(r2\_pboole\ X0\ X2\ X1))) \tag{14}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow(k2\_pboole\ X0\ X1\ X2 = k2\_pboole\ X0\ X2\ X1) \tag{15}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\Rightarrow(\forall X1.((v4\_msualg\_1\ X1\ X0)\wedge(l3\_msualg\_1\ X1\ X0))\Rightarrow(\forall X2.(m1\_msualg\_2\ X2\ X0\ X1)\Rightarrow(\forall X3.(m3\_pboole\ X3\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1))\Rightarrow((r8\_pboole\ (u1\_struct\_0\ X0)\ X3\ (u3\_msualg\_1\ X0\ X1))\Rightarrow(k13\_msualg\_2\ X0\ X1\ (k12\_msualg\_2\ X0\ X1\ X3)\ X2 = k12\_msualg\_2\ X0\ X1\ X3))))))$$