t10_msualg_5 (TMPsgDQ-naTuQGfCga57i2oGWtRMYLofeJCL)

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Let $v1\_xboole\_0 : \iota \Rightarrow o$ 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 $v1\_msualg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1\_msualg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r8\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_msualg\_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r6\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.(\neg v1\_xboole\_0\ X0) \Rightarrow (\forall X1.((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_partfun1\ X1\ X0)))) \Rightarrow (\forall X2.((v1\_msualg\_4\ X2\ X0\ X1) \wedge (m1\_msualg\_4\ X2\ X0\ X1\ X1)) \Rightarrow (\forall X3.((v1\_msualg\_4\ X3\ X0\ X1) \wedge (m1\_msualg\_4\ X3\ X0\ X1\ X1)) \Rightarrow (\forall X4.((v1\_msualg\_4\ X4\ X0\ X1) \wedge (m1\_msualg\_4\ X4\ X0\ X1\ X1)) \Rightarrow ((r2\_pboole\ X0\ (k2\_pboole\ X0\ X2\ X3)\ X4) \wedge (\forall X5.((v1\_msualg\_4\ X5\ X0\ X1) \wedge (m1\_msualg\_4\ X5\ X0\ X1\ X1)) \Rightarrow ((r2\_pboole\ X0\ (k2\_pboole\ X0\ X2\ X3)\ X5) \Rightarrow (r2\_pboole\ X0\ X4\ X5)))) \Rightarrow (r8\_pboole\ X0\ X4\ (k4\_msualg\_5\ X0\ X1\ X2\ X3)))))))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_partfun1\ X1\ X0)))) \Rightarrow (\forall X2.((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge (v1\_partfun1\ X2\ X0)))) \Rightarrow (r6\_pboole\ X0\ (k2\_pboole\ X0\ X1\ (k3\_pboole\ X0\ X1\ X2))\ X1)) \tag{2}$$

Assume the following.

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

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow(r2\_pboole\ X0\ X1\ X1) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0\ X0)\wedge(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))))\Rightarrow((r8\_pboole\ X0\ X1\ X2)\Leftrightarrow(X1 = X2)) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow((r6\_pboole\ X0\ X1\ X2)\Leftrightarrow(X1 = X2)) \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow(\forall X3.(m1\_msualg\_4\ X3\ X0\ X1\ X2)\Rightarrow((v1\_relat\_1\ X3)\wedge((v4\_relat\_1\ X3\ X0)\wedge((v1\_funct\_1\ X3)\wedge(v1\_partfun1\ X3\ X0))))) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0\ X0)\wedge(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge(((v1\_msualg\_4\ X2\ X0\ X1)\wedge(m1\_msualg\_4\ X2\ X0\ X1\ X1))\wedge((v1\_msualg\_4\ X3\ X0\ X1)\wedge(m1\_msualg\_4\ X3\ X0\ X1\ X1)))))\Rightarrow((v1\_msualg\_4\ (k4\_msualg\_5\ X0\ X1\ X2\ X3)\ X0\ X1)\wedge(m1\_msualg\_4\ (k4\_msualg\_5\ X0\ X1\ X2\ X3)\ X0\ X1\ X1)) \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow((v1\_relat\_1\ (k3\_pboole\ X0\ X1\ X2))\wedge((v4\_relat\_1\ (k3\_pboole\ X0\ X1\ X2)\ X0)\wedge((v1\_funct\_1\ (k3\_pboole\ X0\ X1\ X2))\wedge(v1\_partfun1\ (k3\_pboole\ X0\ X1\ X2)\ X0)))) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow((v1\_relat\_1\ (k2\_pboole\ X0\ X1\ X2))\wedge((v4\_relat\_1\ (k2\_pboole\ X0\ X1\ X2)\ X0)\wedge((v1\_funct\_1\ (k2\_pboole\ X0\ X1\ X2))\wedge(v1\_partfun1\ (k2\_pboole\ X0\ X1\ X2)\ X0))))) \tag{10}$$

Theorem 1

$$\forall X0.(\neg v1\_xboole\_0\ X0)\Rightarrow(\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.((v1\_msualg\_4\ X2\ X0\ X1)\wedge(m1\_msualg\_4\ X2\ X0\ X1\ X1))\Rightarrow(\forall X3.((v1\_msualg\_4\ X3\ X0\ X1)\wedge(m1\_msualg\_4\ X3\ X0\ X1\ X1))\Rightarrow(\forall X4.((v1\_msualg\_4\ X4\ X0\ X1)\wedge(m1\_msualg\_4\ X4\ X0\ X1\ X1))\Rightarrow((r8\_pboole\ X0\ X4\ (k3\_pboole\ X0\ X2\ X3))\Rightarrow(r8\_pboole\ X0\ (k4\_msualg\_5\ X0\ X1\ X2\ X4)\ X2))))))$$