t18_extens_1 (TM-NDG1Kq85gzyD199pexUfEG1qRcsKQuCQU)

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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 $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $k12\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. 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 $l1\_struct\_0 : \iota \Rightarrow o$ be given. Let $l2\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l5\_struct\_0 : \iota \Rightarrow o$ be given. Let $v3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge (l1\_msualg\_1\ X0))) \Rightarrow (\forall X1.(l3\_msualg\_1\ X1\ X0) \Rightarrow (\forall X2.(l3\_msualg\_1\ X2\ X0) \Rightarrow (\forall X3.(l3\_msualg\_1\ X3\ X0) \Rightarrow (((m1\_msualg\_2\ X1\ X0\ X2) \wedge (m1\_msualg\_2\ X2\ X0\ X3)) \Rightarrow (m1\_msualg\_2\ X1\ X0\ X3))))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0\ X0) \wedge (((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_partfun1\ X1\ X0)))) \wedge ((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge (v1\_partfun1\ X2\ X0)))))) \Rightarrow ((r8\_pboole\ X0\ X1\ X2) \Leftrightarrow (X1 = X2)) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge (l1\_struct\_0\ X0)) \Rightarrow (\neg v1\_xboole\_0\ (u1\_struct\_0\ X0)) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.((l1\_struct\_0\ X0) \wedge (l2\_msualg\_1\ X1\ X0)) \Rightarrow ((v1\_relat\_1\ (u3\_msualg\_1\ X0\ X1)) \wedge ((v4\_relat\_1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0)) \wedge ((v1\_funct\_1\ (u3\_msualg\_1\ X0\ X1)) \wedge (v1\_partfun1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0))))) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.(m3\_pboole\ X2\ X0\ X1)\Rightarrow((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\wedge(l3\_msualg\_1\ X1\ X0))\Rightarrow(\forall X2.(m1\_msualg\_2\ X2\ X0\ X1)\Rightarrow(l3\_msualg\_1\ X2\ X0)) \tag{6}$$

Assume the following.

$$\forall X0.(l5\_struct\_0\ X0)\Rightarrow(l1\_struct\_0\ X0) \tag{7}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\Rightarrow(\forall X1.(l3\_msualg\_1\ X1\ X0)\Rightarrow(l2\_msualg\_1\ X1\ X0)) \tag{8}$$

Assume the following.

$$\forall X0.(l1\_msualg\_1\ X0)\Rightarrow(l5\_struct\_0\ X0) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\wedge((l3\_msualg\_1\ X1\ X0)\wedge(m3\_pboole\ X2\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1))))\Rightarrow((v3\_msualg\_1\ (k12\_msualg\_2\ X0\ X1\ X2)\ X0)\wedge(m1\_msualg\_2\ (k12\_msualg\_2\ X0\ X1\ X2)\ X0\ X1)) \tag{10}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\Rightarrow(\forall X1.(l3\_msualg\_1\ X1\ X0)\Rightarrow(\forall X2.(m3\_pboole\ X2\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1))\Rightarrow(\forall X3.((v3\_msualg\_1\ X3\ X0)\wedge(m1\_msualg\_2\ X3\ X0\ X1))\Rightarrow((X3 = k12\_msualg\_2\ X0\ X1\ X2)\Leftrightarrow((m3\_pboole\ X2\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X3))\wedge(\forall X4.(m1\_msualg\_2\ X4\ X0\ X1)\Rightarrow((m3\_pboole\ X2\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X4))\Rightarrow(m1\_msualg\_2\ X3\ X0\ X4)))))))) \tag{11}$$

Theorem 1

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