t9_extens_1 (TMTs-BRhbZME5nmCpw2bMuvJYen41R6byVUH)

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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 $m2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2\_msualg\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r6\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3\_funct\_6 : \iota \Rightarrow \iota$ be given. Let $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1\_funcop\_1 : \iota \Rightarrow o$ be given. Let $k10\_xtuple\_0 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_partfun1\ X1\ X0)))) \Rightarrow (\forall X2.((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge (v1\_partfun1\ X2\ X0)))) \Rightarrow ((\forall X3.(X3 \in X0) \Rightarrow (k1\_funct\_1\ X1\ X3 = k1\_funct\_1\ X2\ X3)) \Rightarrow (X1 = X2))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ X1) \wedge ((v1\_funct\_1\ X2) \wedge ((v1\_partfun1\ X2\ X1) \wedge (v1\_funcop\_1\ X2))))) \Rightarrow (\forall X3.((v1\_relat\_1\ X3) \wedge (v1\_funct\_1\ X3)) \Rightarrow (((X0 \in X1) \wedge (X3 = k1\_funct\_1\ X2\ X0)) \Rightarrow (k1\_funct\_1\ (k3\_funct\_6\ X2)\ X0 = k10\_xtuple\_0\ X3))) \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_partfun1\ X1\ X0)))) \wedge ((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge (v1\_partfun1\ X2\ X0))))) \Rightarrow ((r6\_pboole\ X0\ X1\ X2) \Leftrightarrow (X1 = X2)) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X0) \wedge ((v1\_funct\_1\ X0) \wedge (v1\_funcop\_1\ X0))) \Rightarrow ((v1\_relat\_1\ (k1\_funct\_1\ X0\ X1)) \wedge (v1\_funct\_1\ (k1\_funct\_1\ X0\ X1))) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge((v1\_partfun1\ X1\ X0)\wedge(v1\_funcop\_1\ X1)))))\Rightarrow((v1\_relat\_1\ (k3\_funct\_6\ X1))\wedge((v4\_relat\_1\ (k3\_funct\_6\ X1)\ X0)\wedge((v1\_funct\_1\ (k3\_funct\_6\ X1))\wedge(v1\_partfun1\ (k3\_funct\_6\ X1)\ X0)))) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge((v1\_partfun1\ X1\ X0)\wedge(v1\_funcop\_1\ X1)))))\Rightarrow((v1\_relat\_1\ (k3\_funct\_6\ X1))\wedge((v4\_relat\_1\ (k3\_funct\_6\ X1)\ X0)\wedge(v1\_funct\_1\ (k3\_funct\_6\ X1)))) \tag{6}$$

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.

$$\forall X0.((v1\_relat\_1\ X0)\wedge(v1\_funct\_1\ X0))\Rightarrow((v1\_relat\_1\ (k3\_funct\_6\ X0))\wedge(v1\_funct\_1\ (k3\_funct\_6\ X0))) \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))\Rightarrow(\forall X3.(m2\_pboole\ X3\ X0\ X1\ X2)\Rightarrow((v2\_msualg\_3\ X3\ X0\ X1\ X2)\Leftrightarrow(\forall X4.(X4\in X0)\Rightarrow(k10\_xtuple\_0\ (k1\_funct\_1\ X3\ X4)=k1\_funct\_1\ X2\ X4))))) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0)))))\Rightarrow(\forall X3.(m2\_pboole\ X3\ X0\ X1\ X2)\Rightarrow(v1\_funcop\_1\ X3)) \tag{10}$$

Theorem 1

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))\Rightarrow(\forall X3.(m2\_pboole\ X3\ X0\ X1\ X2)\Rightarrow((v2\_msualg\_3\ X3\ X0\ X1\ X2)\Leftrightarrow(r6\_pboole\ X0\ (k3\_funct\_6\ X3)\ X2))))$$