t23_mssubfam (TMShRvD-NPq1Yh7TvohJfbtQMxU8o1Wte5bD)

October 27, 2020

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 $v2\_finset\_1 : \iota \Rightarrow o$ be given. Let $k2\_mboolean : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1\_finset\_1 : \iota \Rightarrow o$ be given. Let $k3\_tarski : \iota \Rightarrow \iota$ be given. Let $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((v1\_finset\_1\ X0) \wedge (\forall X1.(X1 \in X0) \Rightarrow (v1\_finset\_1\ X1))) \Leftrightarrow (v1\_finset\_1\ (k3\_tarski\ X0)) \tag{1}$$

Assume the following.

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

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge (v1\_funct\_1\ X1))) \Rightarrow ((v2\_finset\_1\ X1) \Leftrightarrow (\forall X2.(X2 \in X0) \Rightarrow (v1\_finset\_1\ (k1\_funct\_1\ X1\ X2)))) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_partfun1\ X1\ X0)))) \Rightarrow (\forall X2.((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge (v1\_partfun1\ X2\ X0)))) \Rightarrow ((X2 = k2\_mboolean\ X0\ X1) \Leftrightarrow (\forall X3.(X3 \in X0) \Rightarrow (k1\_funct\_1\ X2\ X3 = k3\_tarski\ (k1\_funct\_1\ X1\ X3))))) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))\Rightarrow((r1\_pboole\ X0\ X1\ X2)\Leftrightarrow(\forall X3.(X3\in X0)\Rightarrow(k1\_funct\_1\ X1\ X3\in k1\_funct\_1\ X2\ X3)))) \tag{5}$$

Theorem 1

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow((v2\_finset\_1\ (k2\_mboolean\ X0\ X1))\Rightarrow((v2\_finset\_1\ X1)\wedge(\forall X2.((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))\Rightarrow((r1\_pboole\ X0\ X2\ X1)\Rightarrow(v2\_finset\_1\ X2)))))$$