t11_equation (TMY-BiW1LKrvMzmThSLR2zTnkx5UH2NkpPUG)

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 $v1\_funcop\_1 : \iota \Rightarrow o$ be given. Let $r2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3\_funct\_6 : \iota \Rightarrow \iota$ be given. Let $r6\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k9\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_equation : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k10\_xtuple\_0 : \iota \Rightarrow \iota$ be given. Let $k7\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1) \wedge (v1\_funct\_1\ X1)) \Rightarrow ((r1\_tarski\ X0\ (k10\_xtuple\_0\ X1)) \Rightarrow (k7\_relat\_1\ X1\ (k8\_relat\_1\ X1\ X0) = X0)) \tag{1}$$

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.

$$\forall X0.((v1\_relat\_1\ X0)\wedge(v1\_funct\_1\ X0))\Rightarrow((v1\_relat\_1\ (k3\_funct\_6\ X0))\wedge(v1\_funct\_1\ (k3\_funct\_6\ X0))) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\wedge((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge((v1\_partfun1\ X2\ X0)\wedge(v1\_funcop\_1\ X2))))))\Rightarrow((v1\_relat\_1\ (k1\_equation\ X0\ X1\ X2))\wedge((v4\_relat\_1\ (k1\_equation\ X0\ X1\ X2)\ X0)\wedge((v1\_funct\_1\ (k1\_equation\ X0\ X1\ X2))\wedge(v1\_partfun1\ (k1\_equation\ X0\ X1\ X2)\ X0)))) \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))\Rightarrow((r2\_pboole\ X0\ X1\ X2)\Leftrightarrow(\forall X3.(X3\in X0)\Rightarrow(r1\_tarski\ (k1\_funct\_1\ X1\ X3)\ (k1\_funct\_1\ X2\ X3))))) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge((v1\_partfun1\ X2\ X0)\wedge(v1\_funcop\_1\ X2))))))\Rightarrow(\forall X3.((v1\_relat\_1\ X3)\wedge((v4\_relat\_1\ X3\ X0)\wedge((v1\_funct\_1\ X3)\wedge(v1\_partfun1\ X3\ X0))))\Rightarrow((X3=k9\_pboole\ X0\ X1\ X2)\Leftrightarrow(\forall X4.(X4\in X0)\Rightarrow(k1\_funct\_1\ X3\ X4=k7\_relat\_1\ (k1\_funct\_1\ X2\ X4)\ (k1\_funct\_1\ X1\ X4)))))) \tag{10}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge((v1\_partfun1\ X2\ X0)\wedge(v1\_funcop\_1\ X2)))))\Rightarrow(\forall X3.((v1\_relat\_1\ X3)\wedge((v4\_relat\_1\ X3\ X0)\wedge((v1\_funct\_1\ X3)\wedge(v1\_partfun1\ X3\ X0))))\Rightarrow((X3 = k1\_equation\ X0\ X1\ X2)\Leftrightarrow(\forall X4.(X4 \in X0)\Rightarrow(k1\_funct\_1\ X3\ X4 = k8\_relat\_1\ (k1\_funct\_1\ X2\ X4)\ (k1\_funct\_1\ X1\ X4))))))) \tag{11}$$

Theorem 1

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge((v1\_partfun1\ X2\ X0)\wedge(v1\_funcop\_1\ X2)))))\Rightarrow((r2\_pboole\ X0\ X1\ (k3\_funct\_6\ X2))\Rightarrow(r6\_pboole\ X0\ (k9\_pboole\ X0\ (k1\_equation\ X0\ X1\ X2)\ X2)\ X1)))$$