

t14_equation

(TMJB8hV6yEGe7Ws1TH9vhhAU3imE3T4p1oV)

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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 $v1_funcop_1 : \iota \Rightarrow o$ be given. Let $r6_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_equation : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funct_6 : \iota \Rightarrow \iota$ be given. Let $k2_funct_6 : \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k10_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k8_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1_relat_1 X2) \wedge ((v4_relat_1 \\ & X2 X1) \wedge ((v1_funct_1 X2) \wedge ((v1_partfun1 X2 X1) \wedge (v1_funcop_1 X2)))))) \Rightarrow \\ & (\forall X3. ((v1_relat_1 X3) \wedge (v1_funct_1 X3)) \Rightarrow (((X0 \in X1) \wedge (X3 = \\ & k1_funct_1 X2 X0)) \Rightarrow (k1_funct_1 (k2_funct_6 X2) X0 = k9_xtuple_0 \\ & X3))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1_relat_1 X2) \wedge ((v4_relat_1 \\ & X2 X1) \wedge ((v1_funct_1 X2) \wedge ((v1_partfun1 X2 X1) \wedge (v1_funcop_1 X2)))))) \Rightarrow \\ & (\forall X3. ((v1_relat_1 X3) \wedge (v1_funct_1 X3)) \Rightarrow (((X0 \in X1) \wedge (X3 = \\ & k1_funct_1 X2 X0)) \Rightarrow (k1_funct_1 (k3_funct_6 X2) X0 = k10_xtuple_0 \\ & X3))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0. (v1_relat_1 X0) \Rightarrow (k8_relat_1 X0 (k10_xtuple_0 X0) = k9_xtuple_0 X0) \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))))) \Rightarrow \\ & ((r6_pboole X0 X1 X2) \Leftrightarrow (X1 = X2)) \end{aligned} \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X0)\wedge((v1_funct_1 X0)\wedge(v1_funcop_1 X0)))\Rightarrow((v1_relat_1 (k1_funct_1 X0 X1))\wedge(v1_funct_1 (k1_funct_1 X0 X1))) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v1_funcop_1 X1))))\Rightarrow((v1_relat_1 (k3_funct_6 X1))\wedge((v4_relat_1 (k3_funct_6 X1) X0)\wedge((v1_funct_1 (k3_funct_6 X1))\wedge(v1_partfun1 (k3_funct_6 X1) X0)))) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v1_funcop_1 X1))))\Rightarrow((v1_relat_1 (k2_funct_6 X1))\wedge((v4_relat_1 (k2_funct_6 X1) X0)\wedge((v1_funct_1 (k2_funct_6 X1))\wedge(v1_partfun1 (k2_funct_6 X1) X0)))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v1_funcop_1 X1))))\Rightarrow((v1_relat_1 (k3_funct_6 X1))\wedge((v4_relat_1 (k3_funct_6 X1) X0)\wedge(v1_funct_1 (k3_funct_6 X1)))) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v1_funcop_1 X1))))\Rightarrow((v1_relat_1 (k2_funct_6 X1))\wedge((v4_relat_1 (k2_funct_6 X1) X0)\wedge(v1_funct_1 (k2_funct_6 X1)))) \quad (9)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0)\wedge(v1_funct_1 X0))\Rightarrow((v1_relat_1 (k3_funct_6 X0))\wedge(v1_funct_1 (k3_funct_6 X0))) \quad (10)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0)\wedge(v1_funct_1 X0))\Rightarrow((v1_relat_1 (k2_funct_6 X0))\wedge(v1_funct_1 (k2_funct_6 X0))) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge(v1_partfun1 X1 X0)))\Rightarrow(\forall X2.((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge(v1_funct_1 X2)\wedge((v1_partfun1 X2 X0)\wedge(v1_funcop_1 X2))))\Rightarrow(\forall X3.((v1_relat_1 X3)\wedge((v4_relat_1 X3 X0)\wedge((v1_funct_1 X3)\wedge(v1_partfun1 X3 X0))))\Rightarrow((X3 = k1_equation X0 X1 X2)\Leftrightarrow(\forall X4.(X4 \in X0)\Rightarrow(k1_funct_1 X3 X4 = k8_relat_1 (k1_funct_1 X2 X4) (k1_funct_1 X1 X4)))))) \quad (12) \end{aligned}$$

Theorem 1

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v1_funcop_1 X1))))\Rightarrow(r6_pboole X0 (k1_equation X0 (k3_funct_6 X1) X1) (k2_funct_6 X1))$$