

t7_pencil_2 (TMX-
iviZKxTQ5gvUiTUstJZtTkKNMTCXW3e1)

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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 $v2_pralg_1 : \iota \Rightarrow o$ be given. Let $m3_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k12_pralg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k10_pralg_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_funct_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k1_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 (k1_zfmisc_1 X1)) \Leftrightarrow (r1_tarski X0 X1) \quad (1)$$

Assume the following.

$$\forall X0. ((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1. \forall X2. \forall X3. (X2 \neq X3) \Rightarrow (k1_funct_1 (k2_funct_7 X0 X2 X1) X3 = k1_funct_1 X0 X3)) \quad (2)$$

Assume the following.

$$\forall X0. ((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1. \forall X2. (X2 \in k9_xtuple_0 X0) \Rightarrow (k1_funct_1 (k2_funct_7 X0 X2 X1) X2 = X1)) \quad (3)$$

Assume the following.

$$\forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge (v2_pralg_1 X1)))))) \Rightarrow (\forall X2. (m1_subset_1 X2 X0) \Rightarrow (k1_funct_1 (k12_pralg_1 X0 X1) X2 = u1_struct_0 (k10_pralg_1 X0 X1 X2))) \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge(v4_relat_1 X1 X0))\Rightarrow(k1_relset_1 X0 X1 = k9_xtuple_0 X1) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((v1_relat_1 X1)\wedge \\ & ((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\Rightarrow \\ & ((v1_relat_1 (k2_funct_7 X1 X2 X3))\wedge((v4_relat_1 (k2_funct_7 \\ & X1 X2 X3) X0)\wedge((v1_funct_1 (k2_funct_7 X1 X2 X3))\wedge(v1_partfun1 \\ & (k2_funct_7 X1 X2 X3) X0)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((v1_relat_1 X1)\wedge \\ & ((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\Rightarrow \\ & ((v1_relat_1 (k2_funct_7 X1 X2 X3))\wedge((v4_relat_1 (k2_funct_7 \\ & X1 X2 X3) X0)\wedge(v1_funct_1 (k2_funct_7 X1 X2 X3)))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge \\ & (v1_funct_1 X1)\wedge(v1_partfun1 X1 X0)))\Rightarrow(\forall X2.(m3_pboole \\ & X2 X0 X1)\Rightarrow((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge \\ & (v1_partfun1 X2 X0)))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v1_relat_1 X0)\wedge(v1_funct_1 \\ & X0))\Rightarrow((v1_relat_1 (k2_funct_7 X0 X1 X2))\wedge(v1_funct_1 (k2_funct_7 \\ & X0 X1 X2))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge \\ & (v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v2_pralg_1 X1))))\Rightarrow((\\ & v1_relat_1 (k12_pralg_1 X0 X1))\wedge((v4_relat_1 (k12_pralg_1 X0 \\ & X1) X0)\wedge((v1_funct_1 (k12_pralg_1 X0 X1))\wedge(v1_partfun1 (k12_pralg_1 \\ & X0 X1) X0)))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge \\ & (v1_funct_1 X1)\wedge(v1_partfun1 X1 X0)))\Rightarrow(\forall X2.((v1_relat_1 \\ & X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge(v1_partfun1 X2 X0))))\Rightarrow \\ & ((r2_pboole X0 X1 X2)\Leftrightarrow(\forall X3.(X3 \in X0)\Rightarrow(r1_tarski (k1_funct_1 \\ & X1 X3) (k1_funct_1 X2 X3)))) \end{aligned} \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge(v4_relat_1 X1 X0))\Rightarrow((v1_partfun1 X1 X0)\Leftrightarrow(k1_relset_1 X0 X1 = X0)) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge(v1_partfun1 X2 X0))))\Rightarrow ((m3_pboole X2 X0 X1)\Leftrightarrow(r2_pboole X0 X2 X1))) \quad (14)$$

Theorem 1

$$\forall X0.(\neg v1_xboole_0 X0)\Rightarrow(\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v2_pralg_1 X1))))))\Rightarrow(\forall X2.(m3_pboole X2 X0 (k12_pralg_1 X0 X1))\Rightarrow(\forall X3. (m1_subset_1 X3 X0)\Rightarrow(\forall X4.(m1_subset_1 X4 (k1_zfmisc_1 (u1_struct_0 (k10_pralg_1 X0 X1 X3))))\Rightarrow(m3_pboole (k2_funct_7 X2 X3 X4) X0 (k12_pralg_1 X0 X1))))))$$