

t4_matroid0
(TMaG1Q4qyLtSiBxdymLjj5xUJCJHCVBQUku)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v3_pencil_1 : \iota \Rightarrow o$ be given. Let $l1_pre_topc : \iota \Rightarrow o$ be given. Let $v2_matroid0 : \iota \Rightarrow o$ be given. Let $v1_finset_1 : \iota \Rightarrow o$ 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 $v3_pre_topc : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_card_1 : \iota \Rightarrow \iota$ be given. Let $k2_nat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_1 : \iota$ be given. Let $k7_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_domain_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k1_tarski : \iota \Rightarrow \iota$ be given. Let $k2_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_matroid0 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. \neg(X0 \in X1) \wedge (v1_xboole_0 X1) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((X0 \in X1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 X2))) \Rightarrow (m1_subset_1 X0 X2) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1_subset_1 X0 X1) \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. ((\neg v1_xboole_0 X0) \wedge (m1_subset_1 X1 X0)) \Rightarrow (k6_domain_1 X0 X1 = k1_tarski X1) \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((m1_subset_1 X1 (k1_zfmisc_1 X0)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 X0))) \Rightarrow (k4_subset_1 X0 X1 X2 = k2_xboole_0 X1 X2) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1 X1 (k1_zfmisc_1 X0))\Rightarrow(m1_subset_1 (k7_subset_1 X0 X1 X2) (k1_zfmisc_1 X0)) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1_xboole_0 X0)\wedge(m1_subset_1 X1 X0))\Rightarrow(m1_subset_1 (k6_domain_1 X0 X1) (k1_zfmisc_1 X0)) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1_subset_1 X1 (k1_zfmisc_1 X0))\wedge(m1_subset_1 X2 (k1_zfmisc_1 X0)))\Rightarrow(m1_subset_1 (k4_subset_1 X0 X1 X2) (k1_zfmisc_1 X0)) \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1_pre_topc X0)\Rightarrow((v2_matroid0 X0)\Leftrightarrow(\forall X1. & \\ (v1_finset_1 X1)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (u1_struct_0 X0))))\Rightarrow & \\ (\forall X2.((v1_finset_1 X2)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (& \\ u1_struct_0 X0))))\Rightarrow(\neg(X1 \in k1_matroid0 X0)\wedge((X2 \in k1_matroid0 & \\ X0)\wedge((k5_card_1 X2 = k2_nat_1 (k5_card_1 X1) np_1)\wedge(\forall X3. & \\ (m1_subset_1 X3 (u1_struct_0 X0))\Rightarrow(\neg(X3 \in k7_subset_1 (u1_struct_0 & \\ X0) X2 X1)\wedge(k2_xboole_0 X1 (k1_tarski X3) \in k1_matroid0 X0))))))))) & \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.(l1_pre_topc X0)\Rightarrow(\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 (u1_struct_0 X0)))\Rightarrow((v3_pre_topc X1 X0)\Leftrightarrow(X1 \in k1_matroid0 X0))) \quad (11)$$

Assume the following.

$$\forall X0.(v1_xboole_0 X0)\Rightarrow(\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 X0))\Rightarrow(v1_xboole_0 X1)) \quad (12)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0)\wedge((\neg v3_pencil_1 X0)\wedge(l1_pre_topc & \\ X0)))\Rightarrow((v2_matroid0 X0)\Leftrightarrow(\forall X1.((v1_finset_1 X1)\wedge(m1_subset_1 & \\ X1 (k1_zfmisc_1 (u1_struct_0 X0))))\Rightarrow(\forall X2.((v1_finset_1 & \\ X2)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (u1_struct_0 X0))))\Rightarrow(\neg(v3_pre_topc & \\ X1 X0)\wedge((v3_pre_topc X2 X0)\wedge((k5_card_1 X2 = k2_nat_1 (k5_card_1 & \\ X1) np_1)\wedge(\forall X3.(m1_subset_1 X3 (u1_struct_0 X0))\Rightarrow(\neg & \\ X3 \in k7_subset_1 (u1_struct_0 X0) X2 X1)\wedge(v3_pre_topc (k4_subset_1 & \\ (u1_struct_0 X0) X1 (k6_domain_1 (u1_struct_0 X0) X3) X0))))))))) & \end{aligned}$$