# t25_grcat_1 (TMNU7Xp8oVs1a6WdB2KMJNEPYHNiTgD5o4G)

October 27, 2020

Let $v1\_xboole\_0 : \iota \Rightarrow o$ be given. Let $v2\_struct\_0 : \iota \Rightarrow o$ be given. Let $v13\_algstr\_0 : \iota \Rightarrow o$ be given. Let $v3\_rlvect\_1 : \iota \Rightarrow o$ be given. Let $v4\_rlvect\_1 : \iota \Rightarrow o$ be given. Let $l2\_algstr\_0 : \iota \Rightarrow o$ be given. Let $m4\_grcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1\_grcat\_1 : \iota \Rightarrow o$ be given. Let $m1\_grcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4\_grcat\_1 : \iota \Rightarrow o$ be given. Let $m3\_grcat\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2\_grcat\_1 : \iota \Rightarrow o$ be given. Let $l1\_grcat\_1 : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1\ X0\ X1) \Rightarrow ((v1\_xboole\_0\ X1) \vee (X0 \in X1)) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1\_subset\_1\ X0\ X1) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v1\_xboole\_0\ X0) \wedge (v4\_grcat\_1\ X0)) \Rightarrow (\forall X1.(m3\_grcat\_1\ X1\ X0) \Leftrightarrow (m1\_subset\_1\ X1\ X0)) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0) \wedge ((v13\_algstr\_0\ X0) \wedge ((v3\_rlvect\_1\ X0) \wedge ((v4\_rlvect\_1\ X0) \wedge (l2\_algstr\_0\ X0))))) \wedge ((\neg v2\_struct\_0\ X1) \wedge ((v13\_algstr\_0\ X1) \wedge ((v3\_rlvect\_1\ X1) \wedge ((v4\_rlvect\_1\ X1) \wedge (l2\_algstr\_0\ X1)))))) \Rightarrow (\forall X2.(m4\_grcat\_1\ X2\ X0\ X1) \Rightarrow ((\neg v1\_xboole\_0\ X2) \wedge (v4\_grcat\_1\ X2))) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0) \wedge ((v13\_algstr\_0\ X0) \wedge ((v3\_rlvect\_1\ X0) \wedge ((v4\_rlvect\_1\ X0) \wedge (l2\_algstr\_0\ X0))))) \wedge ((\neg v2\_struct\_0\ X1) \wedge ((v13\_algstr\_0\ X1) \wedge ((v3\_rlvect\_1\ X1) \wedge ((v4\_rlvect\_1\ X1) \wedge (l2\_algstr\_0\ X1)))))) \Rightarrow (\forall X2.(m1\_grcat\_1\ X2\ X0\ X1) \Rightarrow ((v2\_grcat\_1\ X2) \wedge (l1\_grcat\_1\ X2))) \tag{5}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v13\_algstr\_0\ X0)\wedge((v3\_rlvect\_1\ X0)\wedge((v4\_rlvect\_1\ X0)\wedge(l2\_algstr\_0\ X0)))))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge((v13\_algstr\_0\ X1)\wedge((v3\_rlvect\_1\ X1)\wedge((v4\_rlvect\_1\ X1)\wedge(l2\_algstr\_0\ X1)))))\Rightarrow(\forall X2.((\neg v1\_xboole\_0\ X2)\wedge(v4\_grcat\_1\ X2))\Rightarrow((m4\_grcat\_1\ X2\ X0\ X1)\Leftrightarrow(\forall X3.(m3\_grcat\_1\ X3\ X2)\Rightarrow((v1\_grcat\_1\ X3)\wedge(m1\_grcat\_1\ X3\ X0\ X1)))))) \tag{6}$$

Assume the following.

$$\forall X0.(v4\_grcat\_1\ X0)\Leftrightarrow(\forall X1.(X1\in X0)\Rightarrow((v1\_grcat\_1\ X1)\wedge((v2\_grcat\_1\ X1)\wedge(l1\_grcat\_1\ X1)))) \tag{7}$$

**Theorem 1**

$$\forall X0.(\neg v1\_xboole\_0\ X0)\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge((v13\_algstr\_0\ X1)\wedge((v3\_rlvect\_1\ X1)\wedge((v4\_rlvect\_1\ X1)\wedge(l2\_algstr\_0\ X1)))))\Rightarrow(\forall X2.((\neg v2\_struct\_0\ X2)\wedge((v13\_algstr\_0\ X2)\wedge((v3\_rlvect\_1\ X2)\wedge((v4\_rlvect\_1\ X2)\wedge(l2\_algstr\_0\ X2)))))\Rightarrow((m4\_grcat\_1\ X0\ X1\ X2)\Leftrightarrow(\forall X3.(m1\_subset\_1\ X3\ X0)\Rightarrow((v1\_grcat\_1\ X3)\wedge(m1\_grcat\_1\ X3\ X1\ X2)))))$$