t22_grcat_1 (TMHUKL-wdggGmeTWURP5H33i9zDHbfWupzXY)

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Let $v1\_grcat\_1 : \iota \Rightarrow o$ be given. Let $v2\_grcat\_1 : \iota \Rightarrow o$ be given. Let $l1\_grcat\_1 : \iota \Rightarrow o$ be given. Let $k7\_grcat\_1 : \iota \Rightarrow \iota$ be given. Let $k8\_grcat\_1 : \iota \Rightarrow \iota$ be given. Let $k13\_grcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $m1\_grcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k14\_grcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v13\_algstr\_0\ X0) \wedge ((v3\_rlvect\_1\ X0) \wedge ((v4\_rlvect\_1\ X0) \wedge (l2\_algstr\_0\ X0))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0\ X1) \wedge ((v13\_algstr\_0\ X1) \wedge ((v3\_rlvect\_1\ X1) \wedge ((v4\_rlvect\_1\ X1) \wedge (l2\_algstr\_0\ X1))))) \Rightarrow (\forall X2.((\neg v2\_struct\_0\ X2) \wedge ((v13\_algstr\_0\ X2) \wedge ((v3\_rlvect\_1\ X2) \wedge ((v4\_rlvect\_1\ X2) \wedge (l2\_algstr\_0\ X2))))) \Rightarrow (\forall X3.((\neg v2\_struct\_0\ X3) \wedge ((v13\_algstr\_0\ X3) \wedge ((v3\_rlvect\_1\ X3) \wedge ((v4\_rlvect\_1\ X3) \wedge (l2\_algstr\_0\ X3))))) \Rightarrow (\forall X4.((v1\_grcat\_1\ X4) \wedge (m1\_grcat\_1\ X4\ X0\ X1)) \Rightarrow (\forall X5.((v1\_grcat\_1\ X5) \wedge (m1\_grcat\_1\ X5\ X1\ X2)) \Rightarrow (\forall X6.((v1\_grcat\_1\ X6) \wedge (m1\_grcat\_1\ X6\ X2\ X3)) \Rightarrow (k14\_grcat\_1\ X0\ X2\ X3\ X6\ (k14\_grcat\_1\ X0\ X1\ X2\ X5\ X4) = k14\_grcat\_1\ X0\ X1\ X3\ (k14\_grcat\_1\ X1\ X2\ X3\ X6\ X5)\ X4)))))))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(((\neg v2\_struct\_0\ X0) \wedge ((v13\_algstr\_0\ X0) \wedge ((v3\_rlvect\_1\ X0) \wedge ((v4\_rlvect\_1\ X0) \wedge (l2\_algstr\_0\ X0))))) \wedge (((\neg v2\_struct\_0\ X1) \wedge ((v13\_algstr\_0\ X1) \wedge ((v3\_rlvect\_1\ X1) \wedge ((v4\_rlvect\_1\ X1) \wedge (l2\_algstr\_0\ X1))))) \wedge (((\neg v2\_struct\_0\ X2) \wedge ((v13\_algstr\_0\ X2) \wedge ((v3\_rlvect\_1\ X2) \wedge ((v4\_rlvect\_1\ X2) \wedge (l2\_algstr\_0\ X2))))) \wedge ((m1\_grcat\_1\ X3\ X1\ X2) \wedge (m1\_grcat\_1\ X4\ X0\ X1))))) \Rightarrow (k14\_grcat\_1\ X0\ X1\ X2\ X3\ X4 = k13\_grcat\_1\ X3\ X4) \tag{2}$$

Assume the following.

$$\forall X0.(l1\_grcat\_1\ X0) \Rightarrow ((\neg v2\_struct\_0\ (k8\_grcat\_1\ X0)) \wedge ((v13\_algstr\_0\ (k8\_grcat\_1\ X0)) \wedge ((v3\_rlvect\_1\ (k8\_grcat\_1\ X0)) \wedge ((v4\_rlvect\_1\ (k8\_grcat\_1\ X0)) \wedge (l2\_algstr\_0\ (k8\_grcat\_1\ X0)))))) \tag{3}$$

Assume the following.

$$\forall X0.(l1\_grcat\_1\ X0)\Rightarrow((\neg v2\_struct\_0\ (k7\_grcat\_1\ X0))\wedge ((v13\_algstr\_0\ (k7\_grcat\_1\ X0))\wedge((v3\_rlvect\_1\ (k7\_grcat\_1\ X0))\wedge ((v4\_rlvect\_1\ (k7\_grcat\_1\ X0))\wedge(l2\_algstr\_0\ (k7\_grcat\_1\ X0)))))) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(((\neg v2\_struct\_0\ X0)\wedge((v13\_algstr\_0\ X0)\wedge((v3\_rlvect\_1\ X0)\wedge((v4\_rlvect\_1\ X0)\wedge (l2\_algstr\_0\ X0)))))\wedge(((\neg v2\_struct\_0\ X1)\wedge((v13\_algstr\_0\ X1)\wedge ((v3\_rlvect\_1\ X1)\wedge((v4\_rlvect\_1\ X1)\wedge(l2\_algstr\_0\ X1)))))\wedge(((\neg v2\_struct\_0\ X2)\wedge((v13\_algstr\_0\ X2)\wedge((v3\_rlvect\_1\ X2)\wedge((v4\_rlvect\_1\ X2)\wedge(l2\_algstr\_0\ X2)))))\wedge((m1\_grcat\_1\ X3\ X1\ X2)\wedge (m1\_grcat\_1\ X4\ X0\ X1)))))\Rightarrow((v1\_grcat\_1\ (k14\_grcat\_1\ X0\ X1\ X2\ X3\ X4))\wedge(m1\_grcat\_1\ (k14\_grcat\_1\ X0\ X1\ X2\ X3\ X4)\ X0\ X2)) \tag{5}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v13\_algstr\_0\ X0)\wedge((v3\_rlvect\_1\ X0)\wedge((v4\_rlvect\_1\ X0)\wedge(l2\_algstr\_0\ X0)))))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge((v13\_algstr\_0\ X1)\wedge((v3\_rlvect\_1\ X1)\wedge((v4\_rlvect\_1\ X1)\wedge(l2\_algstr\_0\ X1)))))\Rightarrow(\forall X2.((v2\_grcat\_1\ X2)\wedge(l1\_grcat\_1\ X2))\Rightarrow((m1\_grcat\_1\ X2\ X0\ X1)\Leftrightarrow((k7\_grcat\_1\ X2 = X0)\wedge(k8\_grcat\_1\ X2 = X1))))) \tag{6}$$

Theorem 1

$$\forall X0.((v1\_grcat\_1\ X0)\wedge((v2\_grcat\_1\ X0)\wedge(l1\_grcat\_1\ X0)))\Rightarrow (\forall X1.((v1\_grcat\_1\ X1)\wedge((v2\_grcat\_1\ X1)\wedge(l1\_grcat\_1\ X1)))\Rightarrow (\forall X2.((v1\_grcat\_1\ X2)\wedge((v2\_grcat\_1\ X2)\wedge(l1\_grcat\_1\ X2)))\Rightarrow (((k7\_grcat\_1\ X2 = k8\_grcat\_1\ X1)\wedge(k7\_grcat\_1\ X1 = k8\_grcat\_1\ X0))\Rightarrow (k13\_grcat\_1\ X2\ (k13\_grcat\_1\ X1\ X0) = k13\_grcat\_1\ (k13\_grcat\_1\ X2\ X1)\ X0))))$$