

t12_modcat_1

(TMQUVZqZ8jJEaGnRosACB3eLrSgmdE6sCen)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_classes2 : \iota \Rightarrow o$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v13_algstr_0 : \iota \Rightarrow o$ be given. Let $v2_rlvect_1 : \iota \Rightarrow o$ be given. Let $v3_rlvect_1 : \iota \Rightarrow o$ be given. Let $v4_rlvect_1 : \iota \Rightarrow o$ be given. Let $v3_group_1 : \iota \Rightarrow o$ be given. Let $v4_vectsp_1 : \iota \Rightarrow o$ be given. Let $v5_vectsp_1 : \iota \Rightarrow o$ be given. Let $l6_algstr_0 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k11_modcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_cat_1 : \iota \Rightarrow \iota$ be given. Let $k3_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m3_modcat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m4_modcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $g1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v11_struct_0 : \iota \Rightarrow o$ be given. Let $v1_cat_1 : \iota \Rightarrow o$ be given. Let $l1_cat_1 : \iota \Rightarrow o$ be given. Let $l1_graph_1 : \iota \Rightarrow o$ be given. Let $m1_modcat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k9_modcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_modcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_modcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_modcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10_modcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $u2_graph_1 : \iota \Rightarrow \iota$ be given. Let $u1_graph_1 : \iota \Rightarrow \iota$ be given. Let $k5_modcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_modcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_mod_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge \\
& ((v2_rlvect_1 X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v3_group_1 \\
& X0) \wedge ((v4_vectsp_1 X0) \wedge ((v5_vectsp_1 X0) \wedge (l6_algstr_0 X0)))))))))) \wedge \\
& (m3_modcat_1 X1 X0)) \Rightarrow (\forall X2. (m4_modcat_1 X2 X0 X1) \Leftrightarrow (m1_subset_1 \\
& X2 X1))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(((v1_funct_1 \\
& X2)\wedge((v1_funct_2 X2 X1 X0)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\
& X1 X0))))\wedge(((v1_funct_1 X3)\wedge((v1_funct_2 X3 X1 X0)\wedge(m1_subset_1 \\
& X3 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0))))\wedge((v1_funct_1 X4)\wedge(m1_subset_1 \\
& X4 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X1 X1) X1))))))\Rightarrow(\forall X5. \\
& \forall X6.\forall X7.\forall X8.\forall X9.(g1_cat_1 X0 X1 X2 \\
& X3 X4 = g1_cat_1 X5 X6 X7 X8 X9)\Rightarrow((X0 = X5)\wedge((X1 = X6)\wedge((X2 = X7)\wedge((X3 = \\
& X8)\wedge(X4 = X9))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v1_xboole_0 X0)\wedge(v1_classes2 X0))\wedge \\
& ((\neg v2_struct_0 X1)\wedge((v13_algstr_0 X1)\wedge((v2_rlvect_1 X1)\wedge((\\
& v3_rlvect_1 X1)\wedge((v4_rlvect_1 X1)\wedge((v3_group_1 X1)\wedge((v4_vectsp_1 \\
& X1)\wedge((v5_vectsp_1 X1)\wedge(l6_algstr_0 X1))))))))))\Rightarrow((\neg v2_struct_0 \\
& (k11_modcat_1 X0 X1))\wedge((\neg v11_struct_0 (k11_modcat_1 X0 X1))\wedge \\
& (v1_cat_1 (k11_modcat_1 X0 X1))))
\end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.(l1_cat_1 X0)\Rightarrow(l1_graph_1 X0) \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v13_algstr_0 X0)\wedge \\
& ((v2_rlvect_1 X0)\wedge((v3_rlvect_1 X0)\wedge((v4_rlvect_1 X0)\wedge((v3_group_1 \\
& X0)\wedge((v4_vectsp_1 X0)\wedge((v5_vectsp_1 X0)\wedge(l6_algstr_0 X0))))))))))\wedge \\
& (m1_modcat_1 X1 X0)\Rightarrow((v1_funct_1 (k9_modcat_1 X0 X1))\wedge((v1_funct_2 \\
& (k9_modcat_1 X0 X1) (k4_modcat_1 X0 X1) X1)\wedge(m1_subset_1 (k9_modcat_1 \\
& X0 X1) (k1_zfmisc_1 (k2_zfmisc_1 (k4_modcat_1 X0 X1) X1))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v13_algstr_0 X0)\wedge \\
& ((v2_rlvect_1 X0)\wedge((v3_rlvect_1 X0)\wedge((v4_rlvect_1 X0)\wedge((v3_group_1 \\
& X0)\wedge((v4_vectsp_1 X0)\wedge((v5_vectsp_1 X0)\wedge(l6_algstr_0 X0))))))))))\wedge \\
& (m1_modcat_1 X1 X0)\Rightarrow((v1_funct_1 (k8_modcat_1 X0 X1))\wedge((v1_funct_2 \\
& (k8_modcat_1 X0 X1) (k4_modcat_1 X0 X1) X1)\wedge(m1_subset_1 (k8_modcat_1 \\
& X0 X1) (k1_zfmisc_1 (k2_zfmisc_1 (k4_modcat_1 X0 X1) X1))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v13_algstr_0 X0)\wedge \\
& ((v2_rlvect_1 X0)\wedge((v3_rlvect_1 X0)\wedge((v4_rlvect_1 X0)\wedge((v3_group_1 \\
& X0)\wedge((v4_vectsp_1 X0)\wedge((v5_vectsp_1 X0)\wedge(l6_algstr_0 X0))))))))))\wedge \\
& (m1_modcat_1 X1 X0)\Rightarrow(m3_modcat_1 (k4_modcat_1 X0 X1) X0)
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \wedge \\ & ((\neg v2_struct_0 X1) \wedge ((v13_algstr_0 X1) \wedge ((v2_rlvect_1 X1) \wedge ((\\ & v3_rlvect_1 X1) \wedge ((v4_rlvect_1 X1) \wedge ((v3_group_1 X1) \wedge ((v4_vectsp_1 \\ & X1) \wedge ((v5_vectsp_1 X1) \wedge (l6_algstr_0 X1)))))))))) \Rightarrow (m1_modcat_1 \\ & (k3_modcat_1 X0 X1) X1) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \wedge \\ & ((\neg v2_struct_0 X1) \wedge ((v13_algstr_0 X1) \wedge ((v2_rlvect_1 X1) \wedge ((\\ & v3_rlvect_1 X1) \wedge ((v4_rlvect_1 X1) \wedge ((v3_group_1 X1) \wedge ((v4_vectsp_1 \\ & X1) \wedge ((v5_vectsp_1 X1) \wedge (l6_algstr_0 X1)))))))))) \Rightarrow ((v1_cat_1 \\ & (k11_modcat_1 X0 X1)) \wedge (l1_cat_1 (k11_modcat_1 X0 X1))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge \\ & ((v2_rlvect_1 X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v3_group_1 \\ & X0) \wedge ((v4_vectsp_1 X0) \wedge ((v5_vectsp_1 X0) \wedge (l6_algstr_0 X0)))))))))) \wedge \\ & (m1_modcat_1 X1 X0) \Rightarrow ((v1_funct_1 (k10_modcat_1 X0 X1)) \wedge (m1_subset_1 \\ & (k10_modcat_1 X0 X1) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (\\ & k4_modcat_1 X0 X1) (k4_modcat_1 X0 X1)) (k4_modcat_1 X0 X1)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_graph_1 \\ & X0))) \Rightarrow (\forall X1. (m1_subset_1 X1 (u4_struct_0 X0)) \Rightarrow (k4_graph_1 \\ & X0 X1 = k3_funct_2 (u4_struct_0 X0) (u1_struct_0 X0) (u2_graph_1 \\ & X0) X1)) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_graph_1 \\ & X0))) \Rightarrow (\forall X1. (m1_subset_1 X1 (u4_struct_0 X0)) \Rightarrow (k3_graph_1 \\ & X0 X1 = k3_funct_2 (u4_struct_0 X0) (u1_struct_0 X0) (u1_graph_1 \\ & X0) X1)) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2_struct_0 X1) \wedge ((v13_algstr_0 X1) \wedge ((v2_rlvect_1 X1) \wedge ((\\ & v3_rlvect_1 X1) \wedge ((v4_rlvect_1 X1) \wedge ((v3_group_1 X1) \wedge ((v4_vectsp_1 \\ & X1) \wedge ((v5_vectsp_1 X1) \wedge (l6_algstr_0 X1)))))))))) \Rightarrow (k11_modcat_1 \\ & X0 X1 = g1_cat_1 (k3_modcat_1 X0 X1) (k4_modcat_1 X1 (k3_modcat_1 \\ & X0 X1)) (k8_modcat_1 X1 (k3_modcat_1 X0 X1)) (k9_modcat_1 X1 (k3_modcat_1 \\ & X0 X1)) (k10_modcat_1 X1 (k3_modcat_1 X0 X1))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\
& X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v3_group_1 X0) \wedge \\
& (v4_vectsp_1 X0) \wedge ((v5_vectsp_1 X0) \wedge (l6_algstr_0 X0)))))))) \Rightarrow \\
& (\forall X1.(m1_modcat_1 X1 X0) \Rightarrow (\forall X2.((v1_funct_1 X2) \wedge \\
& (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (k4_modcat_1 \\
& X0 X1) (k4_modcat_1 X0 X1) (k4_modcat_1 X0 X1)))))) \Rightarrow ((X2 = k10_modcat_1 \\
& X0 X1) \Leftrightarrow ((\forall X3.(m4_modcat_1 X3 X0 (k4_modcat_1 X0 X1)) \Rightarrow (\forall X4. \\
& (m4_modcat_1 X4 X0 (k4_modcat_1 X0 X1)) \Rightarrow ((k4_tarski X3 X4 \in k1_relset_1 \\
& (k2_zfmisc_1 (k4_modcat_1 X0 X1) (k4_modcat_1 X0 X1)) X2) \Leftrightarrow (k5_modcat_1 \\
& X0 X1 X3 = k6_modcat_1 X0 X1 X4)))) \wedge (\forall X3.(m4_modcat_1 X3 X0 \\
& (k4_modcat_1 X0 X1)) \Rightarrow (\forall X4.(m4_modcat_1 X4 X0 (k4_modcat_1 \\
& X0 X1)) \Rightarrow ((k4_tarski X3 X4 \in k1_relset_1 (k2_zfmisc_1 (k4_modcat_1 \\
& X0 X1) (k4_modcat_1 X0 X1)) X2) \Rightarrow (k1_binop_1 X2 X3 X4 = k8_mod_2 X0 \\
& X3 X4)))))))))
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\
& X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v3_group_1 X0) \wedge \\
& (v4_vectsp_1 X0) \wedge ((v5_vectsp_1 X0) \wedge (l6_algstr_0 X0)))))))) \Rightarrow \\
& (\forall X1.(m1_modcat_1 X1 X0) \Rightarrow (\forall X2.((v1_funct_1 X2) \wedge \\
& ((v1_funct_2 X2 (k4_modcat_1 X0 X1) X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (k4_modcat_1 X0 X1) X1)))))) \Rightarrow ((X2 = k9_modcat_1 X0 \\
& X1) \Leftrightarrow (\forall X3.(m4_modcat_1 X3 X0 (k4_modcat_1 X0 X1)) \Rightarrow (k3_funct_2 \\
& (k4_modcat_1 X0 X1) X1 X2 X3 = k6_modcat_1 X0 X1 X3))))))
\end{aligned} \tag{15}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\
& X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v3_group_1 X0) \wedge \\
& (v4_vectsp_1 X0) \wedge ((v5_vectsp_1 X0) \wedge (l6_algstr_0 X0)))))))) \Rightarrow \\
& (\forall X1.(m1_modcat_1 X1 X0) \Rightarrow (\forall X2.((v1_funct_1 X2) \wedge \\
& ((v1_funct_2 X2 (k4_modcat_1 X0 X1) X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (k4_modcat_1 X0 X1) X1)))))) \Rightarrow ((X2 = k8_modcat_1 X0 \\
& X1) \Leftrightarrow (\forall X3.(m4_modcat_1 X3 X0 (k4_modcat_1 X0 X1)) \Rightarrow (k3_funct_2 \\
& (k4_modcat_1 X0 X1) X1 X2 X3 = k5_modcat_1 X0 X1 X3))))))
\end{aligned} \tag{16}$$

Assume the following.

$$\forall X0.(l1_cat_1 X0) \Rightarrow ((v1_cat_1 X0) \Rightarrow (X0 = g1_cat_1 (u1_struct_0 X0) (u4_struct_0 X0) (u1_graph_1 X0) (u2_graph_1 X0) (u1_cat_1 X0))) \tag{17}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2_struct_0 X1) \wedge ((v13_algstr_0 X1) \wedge ((v2_rlvect_1 X1) \wedge ((\\ & v3_rlvect_1 X1) \wedge ((v4_rlvect_1 X1) \wedge ((v3_group_1 X1) \wedge ((v4_vectsp_1 \\ & X1) \wedge ((v5_vectsp_1 X1) \wedge (l6_algstr_0 X1)))))))))) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u4_struct_0 (k11_modcat_1 X0 X1))) \Rightarrow (\forall X3. \\ & (m1_subset_1 X3 (u4_struct_0 (k11_modcat_1 X0 X1))) \Rightarrow ((k4_tarski \\ & X3 X2 \in k1_relset_1 (k2_zfmisc_1 (u4_struct_0 (k11_modcat_1 X0 \\ & X1)) (u4_struct_0 (k11_modcat_1 X0 X1))) (u1_cat_1 (k11_modcat_1 \\ & X0 X1))) \Leftrightarrow (k3_graph_1 (k11_modcat_1 X0 X1) X3 = k4_graph_1 (k11_modcat_1 \\ & X0 X1) X2)))))) \end{aligned}$$