

t12_normsp_2 (TMcMwuAx-
AdQ5zcJp9Coj8h8zE6DPcFDW9US)

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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 $v5_rlvect_1 : \iota \Rightarrow o$ be given. Let $v6_rlvect_1 : \iota \Rightarrow o$ be given. Let $v7_rlvect_1 : \iota \Rightarrow o$ be given. Let $v8_rlvect_1 : \iota \Rightarrow o$ be given. Let $v3_normsp_0 : \iota \Rightarrow o$ be given. Let $v4_normsp_0 : \iota \Rightarrow o$ be given. Let $v2_normsp_1 : \iota \Rightarrow o$ be given. Let $l1_normsp_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_numbers : \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_normsp_2 : \iota \Rightarrow \iota$ be given. Let $r1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_frechet : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $r1_xxreal_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6_numbers : \iota$ be given. Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_normsp_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_algstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_normsp_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_normsp_2 : \iota \Rightarrow \iota$ be given. Let $r1_metric_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v6_metric_1 : \iota \Rightarrow o$ be given. Let $v7_metric_1 : \iota \Rightarrow o$ be given. Let $v8_metric_1 : \iota \Rightarrow o$ be given. Let $v9_metric_1 : \iota \Rightarrow o$ be given. Let $l1_metric_1 : \iota \Rightarrow o$ be given. Let $k3_pcomps_1 : \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $g1_pre_topc : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $g1_metric_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v1_pre_topc : \iota \Rightarrow o$ be given. Let $v2_pre_topc : \iota \Rightarrow o$ be given. Let $l2_normsp_0 : \iota \Rightarrow o$ be given. Let $l1_normsp_0 : \iota \Rightarrow o$ be given. Let $l2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_rlvect_1 : \iota \Rightarrow o$ be given. Let $l1_pre_topc : \iota \Rightarrow o$ be given. Let $k2_pcomps_1 : \iota \Rightarrow \iota$ be given. Let $k1_normsp_2 : \iota \Rightarrow \iota$ be given. Let $v1_metric_1 : \iota \Rightarrow o$ be given. Let $u1_pre_topc : \iota \Rightarrow \iota$ be given. Let $u1_metric_1 : \iota \Rightarrow \iota$ be given. Assume the

following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\
& X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v5_rlvect_1 X0) \wedge \\
& ((v6_rlvect_1 X0) \wedge ((v7_rlvect_1 X0) \wedge ((v8_rlvect_1 X0) \wedge ((v3_normsp_0 \\
& X0) \wedge ((v4_normsp_0 X0) \wedge ((v2_normsp_1 X0) \wedge (l1_normsp_1 X0)))))))))) \Rightarrow \\
& (\forall X1.((v1_funct_1 X1) \wedge ((v1_funct_2 X1 k5_numbers (u1_struct_0 \\
& X0)) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 k5_numbers (u1_struct_0 \\
& X0)))))) \Rightarrow (\forall X2.((v1_funct_1 X2) \wedge ((v1_funct_2 X2 k5_numbers \\
& (u1_struct_0 (k2_normsp_2 X0)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\
& (k2_zfmisc_1 k5_numbers (u1_struct_0 (k2_normsp_2 X0)))))) \Rightarrow \\
& (\forall X3.(m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 \\
& X4 (u1_struct_0 (k2_normsp_2 X0)) \Rightarrow (((r1_funct_2 k5_numbers \\
& (u1_struct_0 X0) k5_numbers (u1_struct_0 (k2_normsp_2 X0)) X1 \\
& X2) \wedge (X3 = X4)) \Rightarrow ((r1_metric.6 (k2_normsp_2 X0) X2 X4) \Leftrightarrow (\forall X5. \\
& (m1_subset_1 X5 k1_numbers) \Rightarrow (\neg(\neg r1_xreal_0 X5 k6_numbers) \wedge \\
& (\forall X6.(m2_subset_1 X6 k1_numbers k5_numbers) \Rightarrow (\exists X7. \\
& (m2_subset_1 X7 k1_numbers k5_numbers) \wedge ((r1_xreal_0 X6 X7) \wedge \\
& (r1_xreal_0 X5 (k1_normsp_0 X0 (k5_algstr_0 X0 (k1_normsp_1 X0 \\
& X1 X7) X3)))))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v6_metric_1 X0) \wedge ((v7_metric_1 \\
& X0) \wedge ((v8_metric_1 X0) \wedge ((v9_metric_1 X0) \wedge (l1_metric_1 X0)))))) \Rightarrow \\
& (\forall X1.((v1_funct_1 X1) \wedge ((v1_funct_2 X1 k5_numbers (u1_struct_0 \\
& X0)) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 k5_numbers (u1_struct_0 \\
& X0)))))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
& ((v1_funct_1 X3) \wedge ((v1_funct_2 X3 k5_numbers (u1_struct_0 (k3_pcomps_1 \\
& X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 k5_numbers (\\
& u1_struct_0 (k3_pcomps_1 X0)))))) \Rightarrow (\forall X4.(m1_subset_1 \\
& X4 (u1_struct_0 (k3_pcomps_1 X0)) \Rightarrow (((r1_funct_2 k5_numbers \\
& (u1_struct_0 X0) k5_numbers (u1_struct_0 (k3_pcomps_1 X0)) X1 \\
& X3) \wedge (X2 = X4)) \Rightarrow ((r1_metric.6 X0 X1 X2) \Leftrightarrow (r1_frechet (k3_pcomps_1 \\
& X0) X3 X4)))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& ((\neg v1_xboole_0 X1) \wedge ((\neg v1_xboole_0 X3) \wedge (((v1_funct_1 X4) \wedge ((\\
& v1_funct_2 X4 X0 X1) \wedge (m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 \\
& X0 X1)))))) \wedge ((v1_funct_1 X5) \wedge ((v1_funct_2 X5 X2 X3) \wedge (m1_subset_1 \\
& X5 (k1_zfmisc_1 (k2_zfmisc_1 X2 X3)))))) \Rightarrow ((r1_funct_2 X0 X1 \\
& X2 X3 X4 X5) \Leftrightarrow (X4 = X5))
\end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 (k1_zfmisc_1 X0)))\Rightarrow(\forall X2.\forall X3.(g1_pre_topc X0 X1 = g1_pre_topc X2 X3)\Rightarrow((X0 = X2)\wedge(X1 = X3))) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.((v1_funct_1 X1)\wedge((v1_funct_2 X1 (k2_zfmisc_1 X0 X0) k1_numbers)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 X0 X0) k1_numbers))))\Rightarrow(\forall X2.\forall X3.(g1_metric_1 X0 X1 = g1_metric_1 X2 X3)\Rightarrow((X0 = X2)\wedge(X1 = X3))) \quad (5)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge(l1_struct_0 X0))\Rightarrow(\neg v1_xboole_0 (u1_struct_0 X0)) \quad (6)$$

Assume the following.

$$\forall X0.(l1_metric_1 X0)\Rightarrow((v1_pre_topc (k3_pcomps_1 X0))\wedge(v2_pre_topc (k3_pcomps_1 X0))) \quad (7)$$

Assume the following.

$$\forall X0.(l2_normsp_0 X0)\Rightarrow((l1_normsp_0 X0)\wedge(l2_struct_0 X0)) \quad (8)$$

Assume the following.

$$\forall X0.(l1_normsp_1 X0)\Rightarrow((l1_rlvect_1 X0)\wedge(l2_normsp_0 X0)) \quad (9)$$

Assume the following.

$$\forall X0.(l1_normsp_0 X0)\Rightarrow(l1_struct_0 X0) \quad (10)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge((v13_algstr_0 X0)\wedge((v2_rlvect_1 X0)\wedge((v3_rlvect_1 X0)\wedge((v4_rlvect_1 X0)\wedge((v5_rlvect_1 X0)\wedge((v6_rlvect_1 X0)\wedge((v7_rlvect_1 X0)\wedge((v8_rlvect_1 X0)\wedge((v3_normsp_0 X0)\wedge((v4_normsp_0 X0)\wedge((v2_normsp_1 X0)\wedge(l1_normsp_1 X0))))))))))))\Rightarrow((\neg v2_struct_0 (k3_normsp_2 X0))\wedge((v2_pre_topc (k3_normsp_2 X0))\wedge(l1_pre_topc (k3_normsp_2 X0)))) \quad (11)$$

Assume the following.

$$\forall X0.(l1_metric_1 X0)\Rightarrow(m1_subset_1 (k2_pcomps_1 X0) (k1_zfmisc_1 (k1_zfmisc_1 (u1_struct_0 X0)))) \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\ & X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v5_rlvect_1 X0) \wedge \\ & ((v6_rlvect_1 X0) \wedge ((v7_rlvect_1 X0) \wedge ((v8_rlvect_1 X0) \wedge ((v3_normsp_0 \\ & X0) \wedge ((v4_normsp_0 X0) \wedge ((v2_normsp_1 X0) \wedge (l1_normsp_1 X0)))))))))) \Rightarrow \\ & ((\neg v2_struct_0 (k2_normsp_2 X0)) \wedge ((v6_metric_1 (k2_normsp_2 \\ & X0)) \wedge ((v7_metric_1 (k2_normsp_2 X0)) \wedge ((v8_metric_1 (k2_normsp_2 \\ & X0)) \wedge ((v9_metric_1 (k2_normsp_2 X0)) \wedge (l1_metric_1 (k2_normsp_2 \\ & X0)))))))) \end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\ & X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v5_rlvect_1 X0) \wedge \\ & ((v6_rlvect_1 X0) \wedge ((v7_rlvect_1 X0) \wedge ((v8_rlvect_1 X0) \wedge ((v3_normsp_0 \\ & X0) \wedge ((v4_normsp_0 X0) \wedge ((v2_normsp_1 X0) \wedge (l1_normsp_1 X0)))))))))) \Rightarrow \\ & ((v1_funct_1 (k1_normsp_2 X0)) \wedge ((v1_funct_2 (k1_normsp_2 X0) \\ & (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) k1_numbers) \wedge \\ & (m1_subset_1 (k1_normsp_2 X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\ & (u1_struct_0 X0) (u1_struct_0 X0)) k1_numbers)))))) \end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k2_zfmisc_1 \\ & X0 X0) k1_numbers) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) k1_numbers)))))) \Rightarrow ((v1_metric_1 (g1_metric_1 \\ & X0 X1)) \wedge (l1_metric_1 (g1_metric_1 X0 X1))) \end{aligned} \tag{15}$$

Assume the following.

$$\begin{aligned} & \forall X0. (l1_metric_1 X0) \Rightarrow (k3_pcomps_1 X0 = g1_pre_topc (u1_struct_0 \\ & X0) (k2_pcomps_1 X0)) \end{aligned} \tag{16}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\ & X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v5_rlvect_1 X0) \wedge \\ & ((v6_rlvect_1 X0) \wedge ((v7_rlvect_1 X0) \wedge ((v8_rlvect_1 X0) \wedge ((v3_normsp_0 \\ & X0) \wedge ((v4_normsp_0 X0) \wedge ((v2_normsp_1 X0) \wedge (l1_normsp_1 X0)))))))))) \Rightarrow \\ & (k3_normsp_2 X0 = k3_pcomps_1 (k2_normsp_2 X0)) \end{aligned} \tag{17}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\ & X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v5_rlvect_1 X0) \wedge \\ & ((v6_rlvect_1 X0) \wedge ((v7_rlvect_1 X0) \wedge ((v8_rlvect_1 X0) \wedge ((v3_normsp_0 \\ & X0) \wedge ((v4_normsp_0 X0) \wedge ((v2_normsp_1 X0) \wedge (l1_normsp_1 X0)))))))))) \Rightarrow \\ & (k2_normsp_2 X0 = g1_metric_1 (u1_struct_0 X0) (k1_normsp_2 X0)) \end{aligned} \tag{18}$$

Assume the following.

$$\forall X0.(l1_pre_topc\ X0)\Rightarrow((v1_pre_topc\ X0)\Rightarrow(X0 = g1_pre_topc\ (u1_struct_0\ X0)\ (u1_pre_topc\ X0))) \quad (19)$$

Assume the following.

$$\forall X0.(l1_metric_1\ X0)\Rightarrow((v1_metric_1\ X0)\Rightarrow(X0 = g1_metric_1\ (u1_struct_0\ X0)\ (u1_metric_1\ X0))) \quad (20)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0\ X0)\wedge((v13_algstr_0\ X0)\wedge((v2_rlvect_1\ X0)\wedge((v3_rlvect_1\ X0)\wedge((v4_rlvect_1\ X0)\wedge((v5_rlvect_1\ X0)\wedge \\ & ((v6_rlvect_1\ X0)\wedge((v7_rlvect_1\ X0)\wedge((v8_rlvect_1\ X0)\wedge((v3_normsp_0\ X0)\wedge((v4_normsp_0\ X0)\wedge((v2_normsp_1\ X0)\wedge(l1_normsp_1\ X0))))))))))\Rightarrow \\ & (\forall X1.((v1_funct_1\ X1)\wedge((v1_funct_2\ X1\ k5_numbers\ (u1_struct_0\ X0))\wedge(m1_subset_1\ X1\ (k1_zfmisc_1\ (k2_zfmisc_1\ k5_numbers\ (u1_struct_0\ X0))))))\Rightarrow(\forall X2.((v1_funct_1\ X2)\wedge((v1_funct_2\ X2\ k5_numbers\ (u1_struct_0\ (k3_normsp_2\ X0))\wedge(m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1\ k5_numbers\ (u1_struct_0\ (k3_normsp_2\ X0))))))\Rightarrow \\ & (\forall X3.(m1_subset_1\ X3\ (u1_struct_0\ X0))\Rightarrow(\forall X4.(m1_subset_1\ X4\ (u1_struct_0\ (k3_normsp_2\ X0))\Rightarrow(((r1_funct_2\ k5_numbers\ (u1_struct_0\ X0)\ k5_numbers\ (u1_struct_0\ (k3_normsp_2\ X0))\ X1\ X2)\wedge(X3 = X4))\Rightarrow((r1_frechet\ (k3_normsp_2\ X0)\ X2\ X4)\Leftrightarrow(\forall X5.(m1_subset_1\ X5\ k1_numbers)\Rightarrow(\neg(\neg r1_xxreal_0\ X5\ k6_numbers)\wedge(\forall X6.(m2_subset_1\ X6\ k1_numbers\ k5_numbers)\Rightarrow(\exists X7.(m2_subset_1\ X7\ k1_numbers\ k5_numbers)\wedge((r1_xxreal_0\ X6\ X7)\wedge(r1_xxreal_0\ X5\ (k1_normsp_0\ X0\ (k5_algstr_0\ X0\ (k1_normsp_1\ X0\ X1\ X7)\ X3))))))))))))))\Rightarrow \\ & (r1_xxreal_0\ X5\ (k1_normsp_0\ X0\ (k5_algstr_0\ X0\ (k1_normsp_1\ X0\ X1\ X7)\ X3))))))))))))))\Rightarrow \end{aligned}$$