

t49_ndiff_5 (TMSQdwPpiFywQhDUVgALdPvh- hEgTqskJHuq)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_finseq_1 : \iota \Rightarrow o$ be given. Let $v2_prvect_2 : \iota \Rightarrow o$ be given. Let $v1_ndiff_5 : \iota \Rightarrow o$ be given. Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_numbers : \iota$ be given. Let $k4_finseq_1 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k14_prvect_2 : \iota \Rightarrow \iota$ be given. Let $k11_prvect_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_ndiff_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_ndiff_5 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_funct_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_card_3 : \iota \Rightarrow \iota$ be given. Let $k4_prvect_2 : \iota \Rightarrow \iota$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k4_ordinal1 : \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_prvect_2 : \iota \Rightarrow o$ be given. Let $k1_ndiff_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v3_ordinal1 : \iota \Rightarrow o$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v1_normsp_1 : \iota \Rightarrow o$ be given. Let $v2_monoid_0 : \iota \Rightarrow o$ be given. Let $l2_struct_0 : \iota \Rightarrow o$ be given. Let $l2_normsp_0 : \iota \Rightarrow o$ be given. Let $l1_normsp_0 : \iota \Rightarrow o$ be given. Let $l1_normsp_1 : \iota \Rightarrow o$ be given. Let $l1_rlvect_1 : \iota \Rightarrow o$ be given. Let $v1_monoid_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1. \forall X2. \\ & \forall X3. (X2 \neq X3) \Rightarrow (k1_funct_1 (k2_funct_7 X0 X2 X1) X3 = k1_funct_1 \\ & \quad X0 X3)) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X0) \wedge ((v1_funct_1 \\ & X0) \wedge ((v1_finseq_1 X0) \wedge (v2_prvect_2 X0)))))) \Rightarrow (u1_struct_0 (k14_prvect_2 \\ & \quad X0) = k4_card_3 (k4_prvect_2 X0)) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge \\ & (m1_subset_1 X1 (k1_zfmisc_1 X0)))) \Rightarrow (\forall X2. (m2_subset_1 \\ & \quad X2 X0 X1) \Leftrightarrow (m1_subset_1 X2 X1)) \end{aligned} \tag{3}$$

Assume the following.

$$k5_numbers = k4_ordinal1 \quad (4)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge (v1_finseq_1 X0))) \Rightarrow (k4_finseq_1 X0 = k9_xtuple_0 X0) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((\neg v1_xboole_0 X0) \wedge \\ & (((v1_funct_1 X2) \wedge ((v1_funct_2 X2 X0 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1)))))) \wedge (m1_subset_1 X3 X0))) \Rightarrow (k3_funct_2 X0 \\ & X1 X2 X3 = k1_funct_1 X2 X3) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 \\ & X0) \wedge ((v1_funct_1 X0) \wedge ((v1_finseq_1 X0) \wedge (v1_prvect_2 X0)))))) \wedge \\ & ((m1_subset_1 X1 (k4_card_3 (k4_prvect_2 X0))) \wedge (m1_subset_1 \\ & X2 (k4_finseq_1 X0))) \Rightarrow (k1_ndiff_5 X0 X1 X2 = k1_funct_1 X1 X2) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v1_relat_1 X0)) \Rightarrow (\neg v1_xboole_0 (k9_xtuple_0 X0)) \quad (8)$$

Assume the following.

$$(\neg v1_xboole_0 k4_ordinal1) \wedge (v3_ordinal1 k4_ordinal1) \quad (9)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\neg v1_xboole_0 (u1_struct_0 X0)) \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X0) \wedge ((v1_funct_1 \\ & X0) \wedge ((v1_finseq_1 X0) \wedge (v2_prvect_2 X0)))))) \Rightarrow ((\neg v2_struct_0 \\ & (k14_prvect_2 X0)) \wedge ((v1_normsp_1 (k14_prvect_2 X0)) \wedge (v2_monoid_0 \\ & (k14_prvect_2 X0)))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.(l2_struct_0 X0) \Rightarrow (l1_struct_0 X0) \quad (12)$$

Assume the following.

$$\forall X0.(l2_normsp_0 X0) \Rightarrow ((l1_normsp_0 X0) \wedge (l2_struct_0 X0)) \quad (13)$$

Assume the following.

$$\forall X0.(l1_normsp_1 X0) \Rightarrow ((l1_rvect_1 X0) \wedge (l2_normsp_0 X0)) \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge ((v1_finseq_1 X0) \wedge (v2_prvect_2 X0)))))) \wedge \\ & ((m1_subset_1 X1 (k4_finseq_1 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 (k14_prvect_2 X0)))))) \Rightarrow ((v1_funct_1 (k4_ndiff_5 X0 X1 X2)) \wedge ((v1_funct_2 (k4_ndiff_5 X0 X1 X2) (u1_struct_0 (k11_prvect_2 X0 X1)) (u1_struct_0 (k14_prvect_2 X0))) \wedge (m1_subset_1 (k4_ndiff_5 X0 X1 X2) (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 (k11_prvect_2 X0 X1)) (u1_struct_0 (k14_prvect_2 X0))))))) \end{aligned} \quad (15)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge (v1_finseq_1 X0))) \Rightarrow (m1_subset_1 (k4_finseq_1 X0) (k1_zfmisc_1 k5_numbers)) \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge ((v1_finseq_1 X0) \wedge (v2_prvect_2 X0)))))) \wedge (m1_subset_1 X1 (k4_finseq_1 X0))) \Rightarrow ((v1_funct_1 (k3_ndiff_5 X0 X1)) \wedge ((v1_funct_2 (k3_ndiff_5 X0 X1) (u1_struct_0 (k14_prvect_2 X0)) (u1_struct_0 (k11_prvect_2 X0 X1))) \wedge (m1_subset_1 (k3_ndiff_5 X0 X1) (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 (k14_prvect_2 X0)) (u1_struct_0 (k11_prvect_2 X0 X1))))))) \end{aligned} \quad (17)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge ((\neg v1_xboole_0 X0) \wedge ((v1_finseq_1 X0) \wedge (v2_prvect_2 X0)))))) \Rightarrow ((\neg v2_struct_0 (k14_prvect_2 X0)) \wedge ((v1_normsp_1 (k14_prvect_2 X0)) \wedge (l1_normsp_1 (k14_prvect_2 X0)))) \quad (18)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge ((v1_finseq_1 X0) \wedge (v2_prvect_2 X0)))))) \Rightarrow (\forall X1.(m2_subset_1 X1 k5_numbers (k4_finseq_1 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 (k14_prvect_2 X0))) \Rightarrow (\forall X3.((v1_funct_1 X3) \wedge ((v1_funct_2 X3 (u1_struct_0 (k11_prvect_2 X0 X1)) (u1_struct_0 (k14_prvect_2 X0))) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 (k11_prvect_2 X0 X1)) (u1_struct_0 (k14_prvect_2 X0)))))) \Rightarrow ((X3 = k4_ndiff_5 X0 X1 X2) \Leftrightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 (k11_prvect_2 X0 X1))) \Rightarrow (k3_funct_2 (u1_struct_0 (k11_prvect_2 X0 X1)) (u1_struct_0 (k14_prvect_2 X0)) X3 X4 = k2_funct_7 X2 X1 X4)))))) \end{aligned} \quad (19)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X0) \wedge ((v1_funct_1 \\
& X0) \wedge ((v1_finseq_1 X0) \wedge (v2_prvect_2 X0)))))) \Rightarrow (\forall X1.(m2_subset_1 \\
& X1 \ k5_numbers \ (k4_finseq_1 X0)) \Rightarrow (\forall X2.((v1_funct_1 X2) \wedge \\
& ((v1_funct_2 X2 \ (u1_struct_0 \ (k14_prvect_2 X0)) \ (u1_struct_0 \\
& (k11_prvect_2 X0 \ X1))) \wedge (m1_subset_1 X2 \ (k1_zfmisc_1 \ (k2_zfmisc_1 \\
& (u1_struct_0 \ (k14_prvect_2 X0)) \ (u1_struct_0 \ (k11_prvect_2 X0 \\
& X1)))))) \Rightarrow ((X2 = k3_ndiff_5 X0 \ X1) \Leftrightarrow (\forall X3.(m1_subset_1 X3 \\
& (k4_card_3 \ (k4_prvect_2 X0)) \Rightarrow (k1_funct_1 X2 \ X3 = k1_ndiff_5 X0 \\
& X3 \ X1))))))
\end{aligned} \tag{20}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge ((v1_finseq_1 \\
& X0) \wedge (v2_prvect_2 X0)))) \Rightarrow ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge \\
& ((v1_finseq_1 X0) \wedge (v1_prvect_2 X0))))
\end{aligned} \tag{21}$$

Assume the following.

$$\forall X0.(l1_struct_0 X0) \Rightarrow ((v2_monoid_0 X0) \Rightarrow (v1_monoid_0 X0)) \tag{22}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_monoid_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\forall X1. \\
& (m1_subset_1 X1 \ (u1_struct_0 X0)) \Rightarrow ((v1_relat_1 X1) \wedge (v1_funct_1 \\
& X1)))
\end{aligned} \tag{23}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X0) \wedge ((v1_funct_1 \\
& X0) \wedge ((v1_finseq_1 X0) \wedge ((v2_prvect_2 X0) \wedge (v1_ndiff_5 X0)))))) \Rightarrow \\
& (\forall X1.(m2_subset_1 X1 \ k5_numbers \ (k4_finseq_1 X0)) \Rightarrow (\forall X2. \\
& (m2_subset_1 X2 \ k5_numbers \ (k4_finseq_1 X0)) \Rightarrow (\forall X3.(m1_subset_1 \\
& X3 \ (u1_struct_0 \ (k14_prvect_2 X0)) \Rightarrow (\forall X4.(m1_subset_1 \\
& X4 \ (u1_struct_0 \ (k14_prvect_2 X0)) \Rightarrow (\forall X5.(m1_subset_1 \\
& X5 \ (u1_struct_0 \ (k11_prvect_2 X0 \ X1)) \Rightarrow ((X4 = k3_funct_2 \ (u1_struct_0 \\
& (k11_prvect_2 X0 \ X1)) \ (u1_struct_0 \ (k14_prvect_2 X0)) \ (k4_ndiff_5 \\
& X0 \ X1 \ X3) \ X5) \Rightarrow ((X1 = X2) \vee (k3_funct_2 \ (u1_struct_0 \ (k14_prvect_2 \\
& X0)) \ (u1_struct_0 \ (k11_prvect_2 X0 \ X2)) \ (k3_ndiff_5 X0 \ X2) \ X3 = k3_funct_2 \\
& (u1_struct_0 \ (k14_prvect_2 X0)) \ (u1_struct_0 \ (k11_prvect_2 X0 \\
& X2)) \ (k3_ndiff_5 X0 \ X2) \ X4)))))))))
\end{aligned}$$