

t31_nagata_1 (TMVSd-
FKG2WZXNP4BMzM2xUBAeF9peoJB5or)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_pre_topc : \iota \Rightarrow o$ be given. Let $l1_pre_topc : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $r1_pcomps_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_xxreal_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6_numbers : \iota$ be given. Let $k5_nagata_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_nagata_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_xcmplx_0 : \iota \Rightarrow o$ be given. Let $k2_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xreal_0 : \iota \Rightarrow o$ be given. Let $k7_real_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k1_metric_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_xxreal_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v1_xxreal_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_pre_topc X0) \wedge (l1_pre_topc \\ & X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 k1_numbers) \Rightarrow (\forall X2.(\\ & (v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 (u1_struct_0 X0) \\ & (u1_struct_0 X0)) k1_numbers) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (\\ & k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) k1_numbers)))))) \Rightarrow \\ & ((r1_nagata_1 (u1_struct_0 X0) X2) \Rightarrow ((r1_xxreal_0 X1 k6_numbers) \vee \\ & (r1_nagata_1 (u1_struct_0 X0) (k5_nagata_1 (k2_zfmisc_1 (u1_struct_0 \\ & X0) (u1_struct_0 X0)) X1 X2)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0.(v1_xcmplx_0 X0) \Rightarrow (k2_xcmplx_0 X0 k6_numbers = X0) \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1 X0 k1_numbers) \wedge (v1_xreal_0 X1)) \Rightarrow (k7_real_1 X0 X1 = k2_xcmplx_0 X0 X1) \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1_subset_1 X0 k1_numbers) \Rightarrow (\forall X1.(\neg v1_xboole_0 \\ & X1) \Rightarrow (\forall X2.((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 \\ & X1 X1) k1_numbers) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X1 X1) k1_numbers)))))) \Rightarrow (\forall X3.(m1_subset_1 \\ & X3 X1) \Rightarrow (\forall X4.(m1_subset_1 X4 X1) \Rightarrow (k1_metric_1 X1 X1 (k5_nagata_1 \\ & (k2_zfmisc_1 X1 X1) X0 X2) X3 X4 = k3_xxreal_0 X0 (k1_metric_1 X1 X1 \\ & X2 X3 X4)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k2_zfmisc_1 \\ & X0 X0) k1_numbers) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) k1_numbers)))))) \Rightarrow ((r1_nagata_1 X0 X1) \Leftrightarrow (\forall X2. \\ & (m1_subset_1 X2 X0) \Rightarrow (\forall X3.(m1_subset_1 X3 X0) \Rightarrow (\forall X4. \\ & (m1_subset_1 X4 X0) \Rightarrow ((k1_metric_1 X0 X0 X1 X2 X2 = k6_numbers) \wedge (\\ & (k1_metric_1 X0 X0 X1 X2 X3 = k1_metric_1 X0 X0 X1 X3 X2) \wedge (r1_xxreal_0 \\ & (k1_metric_1 X0 X0 X1 X2 X4) (k7_real_1 (k1_metric_1 X0 X0 X1 X2 X3) \\ & (k1_metric_1 X0 X0 X1 X3 X4)))))))))) \end{aligned} \quad (5)$$

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.

$$\forall X0.(l1_pre_topc X0) \Rightarrow (l1_struct_0 X0) \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1_subset_1 X1 k1_numbers) \wedge \\ & ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 X0 k1_numbers) \wedge (m1_subset_1 \\ & X2 (k1_zfmisc_1 (k2_zfmisc_1 X0 k1_numbers)))))) \Rightarrow ((v1_funct_1 \\ & (k5_nagata_1 X0 X1 X2)) \wedge ((v1_funct_2 (k5_nagata_1 X0 X1 X2) X0 k1_numbers) \wedge \\ & (m1_subset_1 (k5_nagata_1 X0 X1 X2) (k1_zfmisc_1 (k2_zfmisc_1 \\ & X0 k1_numbers)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(((v1_funct_1 \\ & X2) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X0 \\ & X1) k1_numbers)))) \wedge ((m1_subset_1 X3 X0) \wedge (m1_subset_1 X4 X1))) \Rightarrow \\ & (m1_subset_1 (k1_metric_1 X0 X1 X2 X3 X4) k1_numbers) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.(v1_xxreal_0 X0) \Rightarrow (\forall X1.(v1_xxreal_0 X1) \Rightarrow ((\\ (r1_xxreal_0 X0 X1) \Rightarrow (k3_xxreal_0 X0 X1 = X0)) \wedge ((\neg r1_xxreal_0 X0 \\ X1) \Rightarrow (k3_xxreal_0 X0 X1 = X1)))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k2_zfmisc_1 \\ X0 X0) k1_numbers) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\ (k2_zfmisc_1 X0 X0) k1_numbers)))))) \Rightarrow ((r1_pcomps_1 X0 X1) \Leftrightarrow (\forall X2. \\ (m1_subset_1 X2 X0) \Rightarrow (\forall X3.(m1_subset_1 X3 X0) \Rightarrow (\forall X4. \\ (m1_subset_1 X4 X0) \Rightarrow (((k1_metric_1 X0 X0 X1 X2 X3 = k6_numbers) \Rightarrow \\ (X2 = X3)) \wedge (((X2 = X3) \Rightarrow (k1_metric_1 X0 X0 X1 X2 X3 = k6_numbers)) \wedge \\ ((k1_metric_1 X0 X0 X1 X2 X3 = k1_metric_1 X0 X0 X1 X3 X2) \wedge (r1_xxreal_0 \\ (k1_metric_1 X0 X0 X1 X2 X4) (k7_real_1 (k1_metric_1 X0 X0 X1 X2 X3) \\ (k1_metric_1 X0 X0 X1 X3 X4)))))))))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0) \Rightarrow (v1_xxreal_0 X0) \quad (12)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0) \Rightarrow (v1_xcmplx_0 X0) \quad (13)$$

Assume the following.

$$\forall X0.(m1_subset_1 X0 k1_numbers) \Rightarrow (v1_xreal_0 X0) \quad (14)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_pre_topc X0) \wedge (l1_pre_topc \\ X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 k1_numbers) \Rightarrow (\forall X2.(\\ (v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 (u1_struct_0 X0) \\ (u1_struct_0 X0)) k1_numbers) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (\\ k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) k1_numbers)))))) \Rightarrow \\ ((r1_pcomps_1 (u1_struct_0 X0) X2) \Rightarrow ((r1_xxreal_0 X1 k6_numbers) \vee \\ (r1_pcomps_1 (u1_struct_0 X0) (k5_nagata_1 (k2_zfmisc_1 (u1_struct_0 \\ X0) (u1_struct_0 X0)) X1 X2)))))) \end{aligned}$$