

t22\_nagata\_2  
(TMQ6RSfhfKH4tbztk8UXjBocLVCvq9DNRqx)

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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  $v9\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v7\_pre\_topc : \iota \Rightarrow o$  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  $k5\_numbers : \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v5\_nagata\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_pcomps\_1 : \iota \Rightarrow o$  be given. Let  $v6\_nagata\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_nagata\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_nagata\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_nagata\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_tops\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_cantor\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\neg (v3\_pcomps\_1 X0) \wedge (\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 \\ & X1 k5\_numbers (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k1\_zfmisc\_1 \\ & (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))))))) \Rightarrow (\neg v5\_nagata\_1 X1 X0))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (((v9\_pre\_topc X0) \wedge ((v7\_pre\_topc X0) \wedge (\exists X1.((v1\_funct\_1 \\ & X1) \wedge ((v1\_funct\_2 X1 k5\_numbers (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers \\ & (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))))))) \wedge (v6\_nagata\_1 \\ & X1 X0))) \Leftrightarrow (v3\_pcomps\_1 X0)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 k5\_numbers \\ & (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \wedge (m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0)))))))))) \Rightarrow ((v2\_nagata\_1 X1 X0) \Rightarrow (v3\_nagata\_1 X1 \\ & X0))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge \\ & (l1\_pre\_topc X0))) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 k5\_numbers \\ & (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \wedge (m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))))))) \Rightarrow (m1\_subset\_1 (k2\_nagata\_1 X0 X1) (k1\_zfmisc\_1 \\ & (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1. ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 k5\_numbers \\ & (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \wedge (m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))))))) \Rightarrow ((v6\_nagata\_1 X1 X0) \Leftrightarrow ((v3\_nagata\_1 \\ & X1 X0) \wedge ((v1\_tops\_2 (k2\_nagata\_1 X0 X1) X0) \wedge ((v1\_cantor\_1 (k2\_nagata\_1 \\ & X0 X1) X0) \wedge (m1\_subset\_1 (k2\_nagata\_1 X0 X1) (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0)))))))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1. ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 k5\_numbers \\ & (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \wedge (m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))))))))) \Rightarrow ((v5\_nagata\_1 X1 X0) \Leftrightarrow ((v2\_nagata\_1 \\ & X1 X0) \wedge ((v1\_tops\_2 (k2\_nagata\_1 X0 X1) X0) \wedge ((v1\_cantor\_1 (k2\_nagata\_1 \\ & X0 X1) X0) \wedge (m1\_subset\_1 (k2\_nagata\_1 X0 X1) (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0)))))))))) \end{aligned} \quad (6)$$

**Theorem 1**

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (((v9\_pre\_topc X0) \wedge ((v7\_pre\_topc X0) \wedge (\exists X1. ((v1\_funct\_1 \\ & X1) \wedge ((v1\_funct\_2 X1 k5\_numbers (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers \\ & (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))))))))) \wedge (v5\_nagata\_1 \\ & X1 X0))) \Leftrightarrow (v3\_pcomps\_1 X0) \end{aligned}$$