

t9\_transgeo (TMJKtQB-  
NvH3N4E3ZX8HiMNhhNzYHa6J6MWA)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  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  $v3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_transgeo : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_partfun1 : \iota \Rightarrow \iota$  be given. Let  $r2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_relat\_1 : \iota \Rightarrow \iota$  be given. Let  $k3\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_funct\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_transgeo : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v3\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v8\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_relat\_2 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 X0) \wedge \\ & ((v3\_funct\_2 X1 X0 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X0)))))) \Rightarrow ((r2\_relset\_1 X0 X0 (k1\_partfun1 X0 X0 X0 X0 X1 (k2\_funct\_2 \\ & X0 X1)) (k6\_partfun1 X0)) \wedge (r2\_relset\_1 X0 X0 (k1\_partfun1 X0 X0 \\ & X0 X0 (k2\_funct\_2 X0 X1) X1) (k6\_partfun1 X0))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1))) \Rightarrow ((r2\_relset\_1 X0 X1 (k4\_relset\_1 X0 X0 X0 \\ & X1 (k6\_partfun1 X0) X2) X2) \wedge (r2\_relset\_1 X0 X1 (k4\_relset\_1 X0 X1 \\ & X1 X1 X2 (k6\_partfun1 X1) X2)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((m1\_subset\_1 X2 \\ & (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1)))) \Rightarrow ((r2\_relset\_1 X0 X1 X2 X3) \Leftrightarrow (X2 = X3)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X2)\wedge \\ & ((v1\_funct\_2 X2 X0 X1)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X1))))))\wedge((v1\_funct\_1 X3)\wedge((v1\_funct\_2 X3 X0 X1)\wedge(m1\_subset\_1 \\ & X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))))))\Rightarrow((r2\_funct\_2 X0 X1 X2 \\ & X3)\Leftrightarrow(X2 = X3)) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.k6\_partfun1 X0 = k4\_relat\_1 X0 \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\ & ((m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))\wedge(m1\_subset\_1 \\ & X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X2 X3))))\Rightarrow(k4\_relset\_1 X0 X1 X2 X3 \\ & X4 X5 = k3\_relat\_1 X4 X5) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_funct\_1 X1)\wedge((v1\_funct\_2 X1 X0 X0)\wedge \\ & ((v3\_funct\_2 X1 X0 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X0))))))\Rightarrow(k2\_funct\_2 X0 X1 = k2\_funct\_1 X1) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1\_funct\_1 X1)\wedge((v1\_funct\_2 \\ & X1 X0 X0)\wedge((v3\_funct\_2 X1 X0 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\ & k2\_zfmisc\_1 X0 X0))))))\wedge((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 X0 X0)\wedge \\ & ((v3\_funct\_2 X2 X0 X0)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X0))))))\Rightarrow(k1\_transgeo X0 X1 X2 = k3\_relat\_1 X1 X2) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\ & (((v1\_funct\_1 X4)\wedge(m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X1))))\wedge((v1\_funct\_1 X5)\wedge(m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X2 X3))))\Rightarrow(k1\_partfun1 X0 X1 X2 X3 X4 X5 = k3\_relat\_1 X4 X5) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_relat\_1 (k4\_relat\_1 X0)\wedge((v3\_relat\_2 (k4\_relat\_1 \\ & X0)\wedge((v4\_relat\_2 (k4\_relat\_1 X0)\wedge(v8\_relat\_2 (k4\_relat\_1 \\ & X0)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_relat\_1 (k4\_relat\_1 X0)\wedge((v4\_relat\_1 (k4\_relat\_1 \\ & X0) X0)\wedge((v1\_funct\_1 (k4\_relat\_1 X0)\wedge(v1\_partfun1 (k4\_relat\_1 \\ & X0) X0)))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.(v1\_partfun1 (k6\_partfun1 X0) X0) \wedge (m1\_subset\_1 (k6\_partfun1 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0))) \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\ & ((m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))) \wedge (m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X2 X3)))) \Rightarrow (m1\_subset\_1 (k4\_relset\_1 X0 X1 X2 X3 X4 X5) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X3))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.v1\_relat\_1 (k4\_relat\_1 X0) \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 X0) \wedge \\ & ((v3\_funct\_2 X1 X0 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))))) \Rightarrow ((v1\_funct\_1 (k2\_funct\_2 X0 X1)) \wedge ((v1\_funct\_2 (k2\_funct\_2 X0 X1) X0 X0) \wedge ((v3\_funct\_2 (k2\_funct\_2 X0 X1) X0 X0) \wedge (m1\_subset\_1 (k2\_funct\_2 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 X0) \wedge ((v3\_funct\_2 X1 X0 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 X0) \wedge ((v3\_funct\_2 X2 X0 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))))) \Rightarrow ((v1\_funct\_1 (k1\_transgeo X0 X1 X2)) \wedge ((v1\_funct\_2 (k1\_transgeo X0 X1 X2) X0 X0) \wedge ((v3\_funct\_2 (k1\_transgeo X0 X1 X2) X0 X0) \wedge (m1\_subset\_1 (k1\_transgeo X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge (v1\_funct\_2 X1 X0 X0) \wedge ((v3\_funct\_2 X1 X0 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 X0) \wedge ((v3\_funct\_2 X2 X0 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))))) \Rightarrow (k2\_transgeo X0 X1 X2 = k1\_transgeo X0 (k2\_funct\_2 X0 X2) (k1\_transgeo X0 X1 X2))) \end{aligned} \quad (17)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ X0 X0))) \Rightarrow (((v1\_relat\_2 X1) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_partfun1 X1 \\ X0) \wedge (v1\_funct\_2 X1 X0 X0)))) \Rightarrow ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 \\ X0 X0) \wedge (v3\_funct\_2 X1 X0 X0)))) \end{aligned} \quad (18)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge ((v3\_relat\_2 X0) \wedge (v8\_relat\_2 X0))) \Rightarrow \quad (19)$$

$$((v1\_relat\_1 X0) \wedge (v1\_relat\_2 X0))$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 X0 X1))) \Rightarrow ((v1\_partfun1 X2 X0) \Rightarrow (v1\_funct\_2 X2 X0 X1)) \end{aligned} \quad (20)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge \\ (v1\_funct\_2 X1 X0 X0) \wedge ((v3\_funct\_2 X1 X0 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 X0 X0)))))) \Rightarrow (r2\_funct\_2 X0 X0 (k2\_transgeo X0 (k6\_partfun1 \\ X0) X1) (k6\_partfun1 X0))) \end{aligned}$$