

t17\_taxonom1 (TMTf-  
FgF3Z1qqDLAArqqEF7WY67YHe2m3Wlc)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  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  $k1\_numbers : \iota$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $v4\_metric\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r3\_relat\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_taxonom1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $k1\_metric\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_xreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X0) \wedge (((v1\_funct\_1 \\ X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 \\ X0) k1\_numbers)))) \wedge (v1\_xreal\_0 X2))) \Rightarrow (m1\_subset\_1 (k1\_taxonom1 \\ X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. k4\_tarski X0 X1 = k2\_tarski (k2\_tarski X0 X1) (k1\_tarski X0) \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) k1\_numbers)))) \Rightarrow ((v4\_metric\_1 \\ X1 X0) \Leftrightarrow (\forall X2. (m1\_subset\_1 X2 X0) \Rightarrow (\forall X3. (m1\_subset\_1 \\ X3 X0) \Rightarrow (k1\_metric\_1 X0 X0 X1 X2 X3 = k1\_metric\_1 X0 X0 X1 X3 X2)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\ & m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) k1\_numbers)))) \Rightarrow \\ & (\forall X2.(v1\_xreal\_0 X2) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X0))) \Rightarrow ((X3 = k1\_taxonom1 X0 X1 X2) \Leftrightarrow (\forall X4. \\ & (m1\_subset\_1 X4 X0) \Rightarrow (\forall X5.(m1\_subset\_1 X5 X0) \Rightarrow ((k4\_tarski \\ & X4 X5 \in X3) \Leftrightarrow (r1\_xreal\_0 (k1\_metric\_1 X0 X0 X1 X4 X5) X2)))))))))) \\ & \hspace{15em} (5) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1\_relat\_1 X0) \Rightarrow (\forall X1.(r3\_relat\_2 X0 X1) \Leftrightarrow (\forall X2. \\ & \forall X3.((X2 \in X1) \wedge ((X3 \in X1) \wedge (k4\_tarski X2 X3 \in X0))) \Rightarrow (k4\_tarski \\ & X3 X2 \in X0))) \\ & \hspace{15em} (6) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.k2\_tarski X0 X1 = k2\_tarski X1 X0 \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1))) \Rightarrow (v1\_relat\_1 X2) \\ & \hspace{15em} (8) \end{aligned}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\ & m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) k1\_numbers)))) \Rightarrow \\ & (\forall X2.(v1\_xreal\_0 X2) \Rightarrow ((v4\_metric\_1 X1 X0) \Rightarrow (r3\_relat\_2 \\ & (k1\_taxonom1 X0 X1 X2) X0)))))) \end{aligned}$$