

## t23\_metric\_3

(TMNkVYZmEcfvGxL698H9hq1Y5HF3RCGRUCj)

October 27, 2020

Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k1\_metric\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k18\_metric\_3 : \iota$  be given. Let  $k7\_metric\_1 : \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k3\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k7\_square\_1 : \iota \Rightarrow \iota$  be given. Let  $k7\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_square\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (\forall X1.(m1\_subset\_1 \\ & X1 k1\_numbers) \Rightarrow (k1\_metric\_1 k1\_numbers k1\_numbers k7\_metric\_1 \\ & X0 X1 = k1\_metric\_1 k1\_numbers k1\_numbers k7\_metric\_1 X1 X0)) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\neg(X0 \neq k1\_xboole\_0) \wedge ((X1 \neq k1\_xboole\_0) \wedge \\ & (\neg \forall X2.(m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1)) \Rightarrow (X2 = k4\_tarski \\ & (k1\_xtuple\_0 X2) (k2\_xtuple\_0 X2)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 \\ & X1) \wedge (m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1)))) \Rightarrow (k3\_domain\_1 X0 X1 \\ & X2 = k2\_xtuple\_0 X2) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 \\ & X1) \wedge (m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1)))) \Rightarrow (k2\_domain\_1 X0 X1 \\ & X2 = k1\_xtuple\_0 X2) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0)\wedge \\ & ((\neg v1\_xboole\_0 X1)\wedge((m1\_subset\_1 X2 X0)\wedge(m1\_subset\_1 X3 X1))))\Rightarrow \\ & (k1\_domain\_1 X0 X1 X2 X3 = k4\_tarski X2 X3) \end{aligned} \quad (5)$$

Assume the following.

$$v1\_xboole\_0 k1\_xboole\_0 \quad (6)$$

Assume the following.

$$\neg v1\_xboole\_0 k1\_numbers \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge((\neg v1\_xboole\_0 \\ & X1)\wedge(m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1))))\Rightarrow(m1\_subset\_1 (k3\_domain\_1 \\ & X0 X1 X2) X1) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge((\neg v1\_xboole\_0 \\ & X1)\wedge(m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1))))\Rightarrow(m1\_subset\_1 (k2\_domain\_1 \\ & X0 X1 X2) X0) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & (v1\_funct\_1 k18\_metric\_3)\wedge((v1\_funct\_2 k18\_metric\_3 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 k1\_numbers k1\_numbers) (k2\_zfmisc\_1 k1\_numbers \\ & k1\_numbers)) k1\_numbers)\wedge(m1\_subset\_1 k18\_metric\_3 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers) \\ & (k2\_zfmisc\_1 k1\_numbers k1\_numbers)) k1\_numbers))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1\_funct\_1 X0)\wedge((v1\_funct\_2 X0 (k2\_zfmisc\_1 (k2\_zfmisc\_1 \\ & k1\_numbers k1\_numbers) (k2\_zfmisc\_1 k1\_numbers k1\_numbers)) \\ & k1\_numbers)\wedge(m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 k1\_numbers k1\_numbers) (k2\_zfmisc\_1 k1\_numbers \\ & k1\_numbers)) k1\_numbers))))\Rightarrow((X0 = k18\_metric\_3)\Leftrightarrow(\forall X1. \\ & (m1\_subset\_1 X1 k1\_numbers)\Rightarrow(\forall X2.(m1\_subset\_1 X2 k1\_numbers)\Rightarrow \\ & (\forall X3.(m1\_subset\_1 X3 k1\_numbers)\Rightarrow(\forall X4.(m1\_subset\_1 \\ & X4 k1\_numbers)\Rightarrow(\forall X5.(m1\_subset\_1 X5 (k2\_zfmisc\_1 k1\_numbers \\ & k1\_numbers))\Rightarrow(\forall X6.(m1\_subset\_1 X6 (k2\_zfmisc\_1 k1\_numbers \\ & k1\_numbers))\Rightarrow(((X5 = k1\_domain\_1 k1\_numbers k1\_numbers X1 X3)\wedge \\ & (X6 = k1\_domain\_1 k1\_numbers k1\_numbers X2 X4))\Rightarrow(k1\_metric\_1 ( \\ & k2\_zfmisc\_1 k1\_numbers k1\_numbers) (k2\_zfmisc\_1 k1\_numbers k1\_numbers) \\ & X0 X5 X6 = k7\_square\_1 (k7\_real\_1 (k5\_square\_1 (k1\_metric\_1 k1\_numbers \\ & k1\_numbers k7\_metric\_1 X1 X2) (k5\_square\_1 (k1\_metric\_1 k1\_numbers \\ & k1\_numbers k7\_metric\_1 X3 X4)))))))))) \end{aligned} \quad (11)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)) \Rightarrow \\ & (\forall X1.(m1\_subset\_1 X1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)) \Rightarrow \\ & (k1\_metric\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers) (k2\_zfmisc\_1 \\ & k1\_numbers k1\_numbers) k18\_metric\_3 X0 X1 = k1\_metric\_1 (k2\_zfmisc\_1 \\ & k1\_numbers k1\_numbers) (k2\_zfmisc\_1 k1\_numbers k1\_numbers) k18\_metric\_3 \\ & X1 X0)) \end{aligned}$$