

## t23\_metric\_1

(TMb7wNL9VCrZ3cnpwr25BayhXejVFPfCayJ)

October 27, 2020

Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $r1\_xreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_metric\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_metric\_1 : \iota$  be given. Let  $k7\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_funct\_5 : \iota$  be given. Let  $k7\_funct\_5 : \iota$  be given. Let  $k1\_numbers : \iota$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $k2\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  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  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k5\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$k9\_funct\_5 = k7\_funct\_5 \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. ((m1\_subset\_1 X0 k1\_numbers) \wedge (v1\_xreal\_0 X1)) \Rightarrow (k7\_real\_1 X0 X1 = k2\_xcmplx\_0 X0 X1) \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. (((v1\_funct\_1 X1) \wedge \\ & ((v1\_funct\_2 X1 (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))) \wedge ((m1\_subset\_1 X2 X0) \wedge \\ & (m1\_subset\_1 X3 X0))) \Rightarrow (k5\_binop\_1 X0 X1 X2 X3 = k1\_binop\_1 X1 X2 X3) \end{aligned} \tag{3}$$

Assume the following.

$$k3\_metric\_1 = k7\_funct\_5 \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((v1\_funct\_1 \\ & X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 \\ & X1) k1\_numbers)))) \wedge ((m1\_subset\_1 X3 X0) \wedge (m1\_subset\_1 X4 X1))) \Rightarrow \\ & (k1\_metric\_1 X0 X1 X2 X3 X4 = k1\_binop\_1 X2 X3 X4) \end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_subset\_1 X0 np\_1) \Rightarrow (\forall X1.(m1\_subset\_1 X1 \\ np\_1) \Rightarrow (\forall X2.(m1\_subset\_1 X2 np\_1) \Rightarrow (r1\_xreal\_0 (k5\_binop\_1 \\ np\_1 k9\_funct\_5 X0 X2) (k2\_xcmplx\_0 (k5\_binop\_1 np\_1 k9\_funct\_5 \\ X0 X1) (k5\_binop\_1 np\_1 k9\_funct\_5 X1 X2)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} (v1\_funct\_1 k9\_funct\_5) \wedge ((v1\_funct\_2 k9\_funct\_5 (k2\_zfmisc\_1 \\ np\_1 np\_1) np\_1) \wedge (m1\_subset\_1 k9\_funct\_5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ (k2\_zfmisc\_1 np\_1 np\_1) np\_1)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} (v1\_funct\_1 k3\_metric\_1) \wedge ((v1\_funct\_2 k3\_metric\_1 (k2\_zfmisc\_1 \\ np\_1 np\_1) k1\_numbers) \wedge (m1\_subset\_1 k3\_metric\_1 (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 (k2\_zfmisc\_1 np\_1 np\_1) k1\_numbers)))))) \end{aligned} \quad (8)$$

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.

$$\forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (v1\_xreal\_0 X0) \quad (10)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(m1\_subset\_1 X0 np\_1) \Rightarrow (\forall X1.(m1\_subset\_1 X1 \\ np\_1) \Rightarrow (\forall X2.(m1\_subset\_1 X2 np\_1) \Rightarrow (r1\_xreal\_0 (k1\_metric\_1 \\ np\_1 np\_1 k3\_metric\_1 X0 X2) (k7\_real\_1 (k1\_metric\_1 np\_1 np\_1 \\ k3\_metric\_1 X0 X1) (k1\_metric\_1 np\_1 np\_1 k3\_metric\_1 X1 X2)))))) \end{aligned}$$