

## t61\_setlim\_2

(TMS3HJ6cdj9d5EcMKWi1cmYYHnALyMdKrsi)

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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  $k9\_setfam\_1 : \iota \Rightarrow \iota$  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  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_kurato\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_setlim\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k8\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 k5\_numbers \\
 & (k9\_setfam\_1 X0)) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
 & k5\_numbers (k9\_setfam\_1 X0)))))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge \\
 & ((v1\_funct\_2 X2 k5\_numbers (k9\_setfam\_1 X0)) \wedge (m1\_subset\_1 X2 \\
 & (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k9\_setfam\_1 X0)))))) \Rightarrow \\
 & (\forall X3. ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 k5\_numbers (k9\_setfam\_1 \\
 & X0)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k9\_setfam\_1 \\
 & X0)))))) \Rightarrow ((\forall X4. (m1\_subset\_1 X4 k5\_numbers) \Rightarrow (k3\_funct\_2 \\
 & k5\_numbers (k9\_setfam\_1 X0) X3 X4 = k4\_subset\_1 X0 (k3\_funct\_2 k5\_numbers \\
 & (k9\_setfam\_1 X0) X1 X4) (k3\_funct\_2 k5\_numbers (k9\_setfam\_1 X0) \\
 & X2 X4))) \Rightarrow (r1\_tarski (k4\_subset\_1 X0 (k3\_kurato\_0 X0 X1) (k3\_kurato\_0 \\
 & X0 X2)) (k3\_kurato\_0 X0 X3))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. k9\_setfam\_1 X0 = k1\_zfmisc\_1 X0 \tag{2}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. \forall X2. (((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 \\
 & X1 k5\_numbers X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers \\
 & X0)))))) \wedge (v7\_ordinal1 X2)) \Rightarrow (k8\_nat\_1 X0 X1 X2 = k1\_funct\_1 X1 X2)
 \end{aligned} \tag{3}$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0) \wedge \\ & (((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1)))))) \wedge (m1\_subset\_1 X3 X0))) \Rightarrow (k3\_funct\_2 X0 \\ & X1 X2 X3 = k1\_funct\_1 X2 X3) \end{aligned} \quad (5)$$

Assume the following.

$$(\neg v1\_xboole\_0 k4\_ordinal1) \wedge (v3\_ordinal1 k4\_ordinal1) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 \\ & X1 k5\_numbers (k9\_setfam\_1 X0)) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 k5\_numbers (k9\_setfam\_1 X0)))))) \wedge ((v1\_funct\_1 \\ & X2) \wedge ((v1\_funct\_2 X2 k5\_numbers (k9\_setfam\_1 X0)) \wedge (m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k9\_setfam\_1 X0))))))) \Rightarrow \\ & ((v1\_funct\_1 (k2\_setlim\_2 X0 X1 X2)) \wedge ((v1\_funct\_2 (k2\_setlim\_2 \\ & X0 X1 X2) k5\_numbers (k9\_setfam\_1 X0)) \wedge (m1\_subset\_1 (k2\_setlim\_2 \\ & X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k9\_setfam\_1 X0)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 k5\_numbers \\ & (k9\_setfam\_1 X0)) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & k5\_numbers (k9\_setfam\_1 X0)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge \\ & ((v1\_funct\_2 X2 k5\_numbers (k9\_setfam\_1 X0)) \wedge (m1\_subset\_1 X2 \\ & (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k9\_setfam\_1 X0)))))) \Rightarrow \\ & (\forall X3.((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 k5\_numbers (k9\_setfam\_1 \\ & X0)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k9\_setfam\_1 \\ & X0)))))) \Rightarrow ((X3 = k2\_setlim\_2 X0 X1 X2) \Leftrightarrow (\forall X4.(m1\_subset\_1 \\ & X4 k5\_numbers) \Rightarrow (k8\_nat\_1 (k9\_setfam\_1 X0) X3 X4 = k4\_subset\_1 X0 \\ & (k8\_nat\_1 (k9\_setfam\_1 X0) X1 X4) (k8\_nat\_1 (k9\_setfam\_1 X0) X2 \\ & X4)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1) \Rightarrow (v7\_ordinal1 X0) \quad (9)$$

**Theorem 1**

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 k5\_numbers \\ & (k9\_setfam\_1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & k5\_numbers (k9\_setfam\_1 X0)))))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge \\ & ((v1\_funct\_2 X2 k5\_numbers (k9\_setfam\_1 X0) \wedge (m1\_subset\_1 X2 \\ & (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (k9\_setfam\_1 X0)))))) \Rightarrow \\ & (r1\_tarski (k4\_subset\_1 X0 (k3\_kurato\_0 X0 X1) (k3\_kurato\_0 X0 \\ & X2)) (k3\_kurato\_0 X0 (k2\_setlim\_2 X0 X1 X2)))) \end{aligned}$$