

t29\_graph\_5  
(TMQ6izbBGUCeGBW5c5G97vr77CPCxJUEYQb)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_graph\_1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v7\_graph\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m2\_graph\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_graph\_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_graph\_5 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $k4\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k3\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_graph\_1 : \iota \Rightarrow \iota$  be given. Let  $u2\_graph\_1 : \iota \Rightarrow \iota$  be given. Let  $v2\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $np\_0 : \iota$  be given. Let  $m1\_graph\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_numbers : \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_card\_1 : \iota \Rightarrow \iota$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $v1\_card\_1 : \iota \Rightarrow o$  be given. Let  $k1\_graph\_5 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.((\neg v1\_xboole\_0 X0) \wedge ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finseq\_1 X0)))) \Rightarrow ((np\_1 \in k4\_finseq\_1 X0) \wedge (k3\_finseq\_1 X0 \in k4\_finseq\_1 X0)) \quad (1)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (X0 = k1\_xboole\_0) \quad (2)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k5\_numbers) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (l1\_graph\_1 X1)) \Rightarrow (\forall X2.(m2\_finseq\_1 X2 (u4\_struct\_0 X1)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X1)) \Rightarrow ((X0 \in k4\_finseq\_1 X2) \Rightarrow (((X3 \neq k1\_funct\_1 (u1\_graph\_1 X1) (k1\_funct\_1 X2 X0)) \wedge (X3 \neq k1\_funct\_1 (u2\_graph\_1 X1) (k1\_funct\_1 X2 X0))) \vee (X3 \in k2\_graph\_5 X1 X2)))))) \quad (3)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_1) \wedge (m2\_subset\_1 \ np\_1 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_1 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_1 \ k1\_numbers)) \end{aligned} \quad (4)$$

Assume the following.

$$v1\_xboole\_0 \ np\_0 \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 \ X0) \wedge (l1\_graph\_1 \ X0)) \Rightarrow (\forall X1. \\ & (m2\_graph\_1 \ X1 \ X0) \Leftrightarrow (m1\_graph\_1 \ X1 \ X0)) \end{aligned} \quad (6)$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \quad (7)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_relat\_1 \ X0) \wedge ((v1\_funct\_1 \ X0) \wedge (v1\_finseq\_1 \ X0))) \Rightarrow \\ & (k4\_finseq\_1 \ X0 = k9\_xtuple\_0 \ X0) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_relat\_1 \ X0) \wedge ((v1\_funct\_1 \ X0) \wedge (v1\_finseq\_1 \ X0))) \Rightarrow \\ & (k3\_finseq\_1 \ X0 = k1\_card\_1 \ X0) \end{aligned} \quad (10)$$

Assume the following.

$$(\neg v1\_xboole\_0 \ k4\_ordinal1) \wedge (v3\_ordinal1 \ k4\_ordinal1) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. (v1\_finset\_1 \ X0) \Rightarrow ((v1\_finset\_1 \ (k1\_card\_1 \ X0)) \wedge \\ & v1\_card\_1 \ (k1\_card\_1 \ X0)) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 \ X0) \wedge (l1\_graph\_1 \ X0)) \Rightarrow (\forall X1. \\ & (m2\_graph\_1 \ X1 \ X0) \Rightarrow (m2\_finseq\_1 \ X1 \ (u4\_struct\_0 \ X0))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 \ X0) \wedge (l1\_graph\_1 \ X0)) \Rightarrow (\forall X1. \\ & (m1\_graph\_1 \ X1 \ X0) \Rightarrow ((v1\_relat\_1 \ X1) \wedge ((v1\_funct\_1 \ X1) \wedge (v1\_finseq\_1 \\ & \quad X1)))) \end{aligned} \quad (14)$$

Assume the following.

$$\forall X0.v1\_card\_1 (k1\_card\_1 X0) \quad (15)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \Rightarrow (\forall X1. \\ & ((v7\_graph\_1 X1 X0) \wedge (m2\_graph\_1 X1 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\ & X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\ & X0)) \Rightarrow ((r1\_graph\_5 X0 X1 X2 X3) \Leftrightarrow ((X1 \neq k1\_xboole\_0) \wedge ((k1\_funct\_1 \\ & (u1\_graph\_1 X0) (k1\_funct\_1 X1 np\_1) = X2) \wedge (k1\_funct\_1 (u2\_graph\_1 \\ & X0) (k1\_funct\_1 X1 (k3\_finseq\_1 X1)) = X3)))))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \Rightarrow (\forall X1. \\ & (m2\_finseq\_1 X1 (u4\_struct\_0 X0)) \Rightarrow (k2\_graph\_5 X0 X1 = ReplSep ( \\ & toset (\lambda X2 : \iota.m1\_subset\_1 X2 (u1\_struct\_0 X0))) (\lambda X2 : \\ & \iota.\exists X3.(m1\_subset\_1 X3 k5\_numbers) \wedge ((X3 \in k4\_finseq\_1 \\ & X1) \wedge (X2 \in k1\_graph\_5 X0 (k7\_partfun1 (u4\_struct\_0 X0) X1 X3)))) \\ & (\lambda X2 : \iota.X2))) \end{aligned} \quad (17)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \Rightarrow ((m1\_subset\_1 X1 X0) \Leftrightarrow \\ & (X1 \in X0))) \wedge ((v1\_xboole\_0 X0) \Rightarrow ((m1\_subset\_1 X1 X0) \Leftrightarrow (v1\_xboole\_0 \\ & X1))) \end{aligned} \quad (18)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Leftrightarrow (X0 \in k4\_ordinal1) \quad (19)$$

Assume the following.

$$\forall X0.((v3\_ordinal1 X0) \wedge (v1\_finset\_1 X0)) \Rightarrow (v7\_ordinal1 X0) \quad (20)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finseq\_1 X0))) \Rightarrow \\ & ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finset\_1 X0))) \end{aligned} \quad (21)$$

Assume the following.

$$\forall X0.(v1\_card\_1 X0) \Rightarrow (v3\_ordinal1 X0) \quad (22)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\ & (u1\_struct\_0 X0)) \Rightarrow (\forall X3.((v7\_graph\_1 X3 X0) \wedge (m2\_graph\_1 \\ & X3 X0)) \Rightarrow ((r1\_graph\_5 X0 X3 X1 X2) \Rightarrow ((X1 \in k2\_graph\_5 X0 X3) \wedge (X2 \in k2\_graph\_5 \\ & X0 X3)))))) \end{aligned}$$