

t33\_graph\_1  
(TMR4dZa1ySTNk4bJaMA1EXpNd6c9PfQQ3jj)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_graph\_1 : \iota \Rightarrow o$  be given. Let  $r1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_graph\_1 : \iota \Rightarrow \iota$  be given. Let  $u2\_graph\_1 : \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_xbool\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k11\_graph\_1 : \iota \Rightarrow \iota$  be given. Let  $k5\_graph\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r4\_graph\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m3\_graph\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_graph\_1 : \iota \Rightarrow o$  be given. Let  $g1\_graph\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge (l1\_graph\_1 X1)) \Rightarrow (((r1\_partfun1 (u1\_graph\_1 \\ & X0) (u1\_graph\_1 X1)) \wedge (r1\_partfun1 (u2\_graph\_1 X0) (u2\_graph\_1 \\ & X1))) \Rightarrow ((r4\_graph\_1 X0 (k5\_graph\_1 X0 X1)) \wedge (r4\_graph\_1 X1 (k5\_graph\_1 \\ & X0 X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge (l1\_graph\_1 X1)) \Rightarrow (\forall X2.((\neg v2\_struct\_0 \\ & X2) \wedge (l1\_graph\_1 X2)) \Rightarrow (((r4\_graph\_1 X0 X1) \wedge (r4\_graph\_1 X1 X2)) \Rightarrow \\ & (r4\_graph\_1 X0 X2)))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \Rightarrow (\forall X1. \\ & (m3\_graph\_1 X1 X0) \Rightarrow ((\neg v2\_struct\_0 X1) \wedge (l1\_graph\_1 X1))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \wedge \\ & ((\neg v2\_struct\_0 X1) \wedge (l1\_graph\_1 X1))) \Rightarrow ((\neg v2\_struct\_0 (k5\_graph\_1 \\ & X0 X1)) \wedge ((v1\_graph\_1 (k5\_graph\_1 X0 X1)) \wedge (l1\_graph\_1 (k5\_graph\_1 \\ & X0 X1)))) \end{aligned} \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(X2 = k2\_xboole\_0 X0 X1) \Leftrightarrow (\forall X3. (X3 \in X2) \Leftrightarrow ((X3 \in X0) \vee (X3 \in X1))) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.(r1\_tarski X0 X1) \Leftrightarrow (\forall X2.(X2 \in X0) \Rightarrow (X2 \in X1)) \quad (6)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \Rightarrow (\forall X1. (X1 = k11\_graph\_1 X0) \Leftrightarrow (\forall X2.(X2 \in X1) \Leftrightarrow ((v1\_graph\_1 X2) \wedge (m3\_graph\_1 X2 X0)))) \quad (7)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge (l1\_graph\_1 X1)) \Rightarrow ((r4\_graph\_1 X0 X1) \Leftrightarrow (m3\_graph\_1 X0 X1))) \quad (8)$$

Assume the following.

$$\forall X0.(l1\_graph\_1 X0) \Rightarrow ((v1\_graph\_1 X0) \Rightarrow (X0 = g1\_graph\_1 (u1\_struct\_0 X0) (u4\_struct\_0 X0) (u1\_graph\_1 X0) (u2\_graph\_1 X0))) \quad (9)$$

**Theorem 1**

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_graph\_1 X0)) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge (l1\_graph\_1 X1)) \Rightarrow (((r1\_partfun1 (u1\_graph\_1 X0) (u1\_graph\_1 X1)) \wedge (r1\_partfun1 (u2\_graph\_1 X0) (u2\_graph\_1 X1))) \Rightarrow (r1\_tarski (k2\_xboole\_0 (k11\_graph\_1 X0) (k11\_graph\_1 X1)) (k11\_graph\_1 (k5\_graph\_1 X0 X1))))))$$