

# t75\_trees.3 (TM- TUypc7qvSaPDp9tvYZ4og8oZpm5UwphGC)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_trees\_1 : \iota \Rightarrow o$  be given. Let  $k5\_trees\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k13\_trees\_3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k12\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k1\_xboole\_0 : \iota$  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  $v4\_trees\_3 : \iota \Rightarrow o$  be given. Let  $k11\_trees\_3 : \iota \Rightarrow \iota$  be given. Let  $k7\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k9\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k3\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_0 : \iota$  be given. Let  $k5\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $k1\_card\_1 : \iota \Rightarrow \iota$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $k10\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_card\_1 : \iota \Rightarrow o$  be given. Let  $v5\_trees\_3 : \iota \Rightarrow o$  be given. Let  $v6\_trees\_3 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (X0 = k1\_xboole\_0) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge ((v1\_finseq\_1 \\ & X0) \wedge (v4\_trees\_3 X0)))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 \\ & X1) \wedge ((v1\_finseq\_1 X1) \wedge (v4\_trees\_3 X1)))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 \\ & X2) \wedge (v1\_trees\_1 X2)) \Rightarrow (\forall X3.((\neg v1\_xboole\_0 X3) \wedge (v1\_trees\_1 \\ & X3)) \Rightarrow (k11\_trees\_3 (k7\_finseq\_1 (k7\_finseq\_1 X0 (k9\_finseq\_1 \\ & X2)) X1) = k5\_trees\_1 (k11\_trees\_3 (k7\_finseq\_1 (k7\_finseq\_1 X0 \\ & (k9\_finseq\_1 X3)) X1)) (k12\_finseq\_1 k5\_numbers (k3\_finseq\_1 \\ & X0)) X2)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 \\ & X1))) \Rightarrow ((X1 = k9\_finseq\_1 X0) \Leftrightarrow ((k3\_finseq\_1 X1 = np\_1) \wedge (k1\_funct\_1 \\ & X1 np\_1 = X0))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finseq\_1 X0))) \Rightarrow ((k7\_finseq\_1 X0 \ k1\_xboole\_0 = X0) \wedge (k7\_finseq\_1 \ k1\_xboole\_0 X0 = X0)) \quad (4)$$

Assume the following.

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

Assume the following.

$$\forall X0.k9\_finseq\_1 X0 = k5\_finseq\_1 X0 \quad (6)$$

Assume the following.

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

Assume the following.

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

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finseq\_1 X0))) \Rightarrow (k3\_finseq\_1 X0 = k1\_card\_1 X0) \quad (9)$$

Assume the following.

$$\forall X0.\exists X1.(m1\_finseq\_1 X1 X0) \wedge ((v1\_relat\_1 X1) \wedge (v4\_relat\_1 X1 \ k5\_numbers) \wedge ((v5\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_xboole\_0 X1) \wedge ((v1\_finset\_1 X1) \wedge (v1\_finseq\_1 X1)))))) \quad (10)$$

Assume the following.

$$\forall X0.((\neg v1\_xboole\_0 X0) \wedge (v1\_trees\_1 X0)) \Rightarrow ((\neg v1\_xboole\_0 (k5\_finseq\_1 X0)) \wedge (v4\_trees\_3 (k5\_finseq\_1 X0))) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.(v1\_relat\_1 (k10\_finseq\_1 X0 X1)) \wedge (v1\_funct\_1 (k10\_finseq\_1 X0 X1)) \quad (12)$$

Assume the following.

$$\forall X0.v1\_finseq\_1 (k5\_finseq\_1 X0) \quad (13)$$

Assume the following.

$$\forall X0.(v1\_relat\_1 (k5\_finseq\_1 X0)) \wedge (v1\_funct\_1 (k5\_finseq\_1 X0)) \quad (14)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow ((v1\_xboole\_0 (k1\_card\_1 X0)) \wedge (v1\_card\_1 (k1\_card\_1 X0))) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.v1\_finseq\_1 (k10\_finseq\_1 X0 X1) \quad (16)$$

Assume the following.

$$\forall X0.\forall X1.k10\_finseq\_1 X0 X1 = k7\_finseq\_1 (k9\_finseq\_1 X0) (k9\_finseq\_1 X1) \quad (17)$$

Assume the following.

$$\forall X0.((\neg v1\_xboole\_0 X0) \wedge (v1\_trees\_1 X0)) \Rightarrow (\forall X1. ((\neg v1\_xboole\_0 X1) \wedge (v1\_trees\_1 X1)) \Rightarrow (k13\_trees\_3 X0 X1 = k11\_trees\_3 (k10\_finseq\_1 X0 X1))) \quad (18)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (v1\_relat\_1 X0) \quad (19)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (v1\_funct\_1 X0) \quad (20)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_xboole\_0 X0))) \Rightarrow ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge ((v4\_trees\_3 X0) \wedge ((v5\_trees\_3 X0) \wedge (v6\_trees\_3 X0))))) \quad (21)$$

**Theorem 1**

$$\forall X0.((\neg v1\_xboole\_0 X0) \wedge (v1\_trees\_1 X0)) \Rightarrow (\forall X1. ((\neg v1\_xboole\_0 X1) \wedge (v1\_trees\_1 X1)) \Rightarrow (\forall X2. ((\neg v1\_xboole\_0 X2) \wedge (v1\_trees\_1 X2)) \Rightarrow ((k5\_trees\_1 (k13\_trees\_3 X1 X2) (k12\_finseq\_1 k5\_numbers k6\_numbers) X0 = k13\_trees\_3 X0 X2) \wedge (k5\_trees\_1 (k13\_trees\_3 X1 X2) (k12\_finseq\_1 k5\_numbers np\_1) X0 = k13\_trees\_3 X1 X0))))$$