

t21\_xboolean  
(TML1sWD6cn7jgTTf5nyCPPXGs5oHQTu4M7e)

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Let  $v1\_xboolean : \iota \Rightarrow o$  be given. Let  $k4\_xboolean : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_xboolean : \iota \Rightarrow \iota$  be given. Let  $k7\_xboolean : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_xboolean : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_xboolean : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k11\_xboolean : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.(v1\_xboolean X0) \Rightarrow (\forall X1.(v1\_xboolean X1) \Rightarrow (k4\_xboolean X0 X1) = k4\_xboolean X0 X1)) \quad (1)$$

Assume the following.

$$\forall X0.(v1\_xboolean X0) \Rightarrow (k3\_xboolean (k3\_xboolean X0) = X0) \quad (2)$$

Assume the following.

$$\forall X0.(v1\_xboolean X0) \Rightarrow (v1\_xboolean (k3\_xboolean X0)) \quad (3)$$

Assume the following.

$$\forall X0.(v1\_xboolean X0) \Rightarrow (\forall X1.(v1\_xboolean X1) \Rightarrow (k7\_xboolean X0 X1 = k4\_xboolean (k6\_xboolean X0 X1) (k6\_xboolean X1 X0))) \quad (4)$$

Assume the following.

$$\forall X0.(v1\_xboolean X0) \Rightarrow (\forall X1.(v1\_xboolean X1) \Rightarrow (k6\_xboolean X0 X1 = k5\_xboolean (k3\_xboolean X0) X1)) \quad (5)$$

Assume the following.

$$\forall X0.(v1\_xboolean X0) \Rightarrow (\forall X1.(v1\_xboolean X1) \Rightarrow (k11\_xboolean X0 X1 = k4\_xboolean X0 (k3\_xboolean X1))) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_xboolean X0) \wedge (v1\_xboolean X1)) \Rightarrow (k7\_xboolean X0 X1 = k7\_xboolean X1 X0) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_xboolean X0)\wedge(v1\_xboolean X1))\Rightarrow(k5\_xboolean X0 X1 = k5\_xboolean X1 X0) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_xboolean X0)\wedge(v1\_xboolean X1))\Rightarrow(k4\_xboolean X0 X1 = k4\_xboolean X1 X0) \quad (9)$$

**Theorem 1**

$$\forall X0.(v1\_xboolean X0)\Rightarrow(\forall X1.(v1\_xboolean X1)\Rightarrow(k4\_xboolean (k3\_xboolean X0) (k7\_xboolean X0 X1) = k4\_xboolean (k3\_xboolean X0) (k3\_xboolean X1)))$$