

t6\_gate\_1  
(TMHrkS8LWwoyK9pWKkg5sNFdPGr6Ax4JEYA)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k4\_gate\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge (\neg v1\_xboole\_0 X1)) \Rightarrow (v1\_xboole\_0 (k4\_gate\_1 X0 X1)) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. ((v1\_xboole\_0 X0) \wedge (v1\_xboole\_0 X1)) \Rightarrow (v1\_xboole\_0 (k4\_gate\_1 X0 X1)) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. ((v1\_xboole\_0 X0) \wedge (\neg v1\_xboole\_0 X1)) \Rightarrow (\neg v1\_xboole\_0 (k4\_gate\_1 X0 X1)) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. k4\_gate\_1 X0 X1 = k4\_gate\_1 X1 X0 \quad (4)$$

**Theorem 1**

$$\forall X0. \forall X1. (\neg(\neg v1\_xboole\_0 (k4\_gate\_1 X0 X1))) \wedge ((\neg(\neg v1\_xboole\_0 X0) \wedge (v1\_xboole\_0 X1)) \wedge (\neg(v1\_xboole\_0 X0) \wedge (\neg v1\_xboole\_0 X1))) \wedge (\neg(((\neg v1\_xboole\_0 X0) \wedge (v1\_xboole\_0 X1)) \vee ((v1\_xboole\_0 X0) \wedge (\neg v1\_xboole\_0 X1)))) \wedge (v1\_xboole\_0 (k4\_gate\_1 X0 X1))$$