

t30_gate_1 (TM-
cQK4pneZasKWJgGAPuJZxXHgPiDrPwxyh)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k24_gate_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k13_gate_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_gate_1 : \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Assume the following.

$$\forall X0. \forall X1. \forall X2. (\neg v1_xboole_0 (k13_gate_1 X0 X1 X2)) \Leftrightarrow ((v1_xboole_0 X0) \wedge ((v1_xboole_0 X1) \wedge (v1_xboole_0 X2))) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\ & (((\neg(\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge ((\neg v1_xboole_0 X2) \wedge \\ & ((\neg v1_xboole_0 X3) \wedge ((\neg v1_xboole_0 X4) \wedge (\neg v1_xboole_0 X5)))))) \Rightarrow \\ & (k24_gate_1 X0 X1 X2 X3 X4 X5 = k1_gate_1 k1_xboole_0)) \wedge (\neg(\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge ((\neg v1_xboole_0 X2) \wedge ((\neg v1_xboole_0 X3) \wedge \\ & ((\neg v1_xboole_0 X4) \wedge ((\neg v1_xboole_0 X5) \wedge (k24_gate_1 X0 X1 X2 X3 X4 X5 \neq k1_xboole_0)))))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (\neg(v1_xboole_0 X0) \wedge ((v1_xboole_0 X1) \wedge ((v1_xboole_0 X2) \wedge (k13_gate_1 X0 X1 X2 \neq k1_gate_1 k1_xboole_0)))) \wedge \\ & ((\neg(v1_xboole_0 X0) \wedge ((v1_xboole_0 X1) \wedge (v1_xboole_0 X2))) \Rightarrow (k13_gate_1 X0 X1 X2 = k1_xboole_0)) \end{aligned} \quad (3)$$

Theorem 1

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\ & (\neg(\neg v1_xboole_0 (k24_gate_1 X0 X1 X2 X3 X4 X5)) \wedge ((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge ((\neg v1_xboole_0 X2) \wedge ((\neg v1_xboole_0 X3) \wedge \\ & ((\neg v1_xboole_0 X4) \wedge (\neg v1_xboole_0 X5)))))))) \wedge (\neg(\neg(\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge ((\neg v1_xboole_0 X2) \wedge ((\neg v1_xboole_0 X3) \wedge \\ & ((\neg v1_xboole_0 X4) \wedge (\neg v1_xboole_0 X5)))))))) \wedge (v1_xboole_0 (k24_gate_1 X0 X1 X2 X3 X4 X5))) \end{aligned}$$