

t40\_gate\_1  
(TMHvresMTPdoaNZMqv18gb2tojipHA5cwsF)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k11\_gate\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_gate\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k18\_gate\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. (\neg(\neg v1\_xboole\_0 (k3\_gate\_1 X0 X1)) \wedge ((v1\_xboole\_0 X0) \wedge (v1\_xboole\_0 X1))) \wedge (\neg(\neg(v1\_xboole\_0 X0) \wedge (v1\_xboole\_0 X1)) \wedge (v1\_xboole\_0 (k3\_gate\_1 X0 X1))) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (\neg v1\_xboole\_0 (k18\_gate\_1 X0 X1 X2 X3 X4)) \Leftrightarrow ((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge ((\neg v1\_xboole\_0 X2) \wedge ((\neg v1\_xboole\_0 X3) \wedge (\neg v1\_xboole\_0 X4))))) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (\neg(\neg v1\_xboole\_0 (k11\_gate\_1 X0 X1 X2)) \wedge ((\neg(\neg v1\_xboole\_0 X0) \wedge (\neg v1\_xboole\_0 X1)) \wedge ((\neg(\neg v1\_xboole\_0 X1) \wedge (\neg v1\_xboole\_0 X2)) \wedge (\neg(\neg v1\_xboole\_0 X2) \wedge (\neg v1\_xboole\_0 X0))))) \wedge (\neg(\neg(\neg(\neg v1\_xboole\_0 X0) \wedge (\neg v1\_xboole\_0 X1)) \wedge ((\neg(\neg v1\_xboole\_0 X1) \wedge (\neg v1\_xboole\_0 X2)) \wedge (\neg(\neg v1\_xboole\_0 X2) \wedge (\neg v1\_xboole\_0 X0))))) \wedge (v1\_xboole\_0 (k11\_gate\_1 X0 X1 X2))) \quad (3)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\ & \forall X6.\forall X7.\forall X8.\forall X9.\forall X10.\forall X11. \\ & \forall X12.\forall X13.\forall X14.\forall X15.\forall X16. \\ & \forall X17.\forall X18.\neg(\neg(\neg v1\_xboole\_0 (k11\_gate\_1 X1 X5 X0))\wedge \\ & (v1\_xboole\_0 X9))\wedge(\neg(\neg v1\_xboole\_0 (k11\_gate\_1 X2 X6 X9))\wedge(v1\_xboole\_0 \\ & X10))\wedge(\neg(\neg v1\_xboole\_0 (k11\_gate\_1 X3 X7 X10))\wedge(v1\_xboole\_0 \\ & X11))\wedge(\neg(\neg v1\_xboole\_0 (k11\_gate\_1 X4 X8 X11))\wedge(v1\_xboole\_0 \\ & X12))\wedge(\neg(\neg v1\_xboole\_0 X13)\wedge(v1\_xboole\_0 (k3\_gate\_1 X1 X5)))\wedge \\ & ((\neg(\neg v1\_xboole\_0 X14)\wedge(v1\_xboole\_0 (k3\_gate\_1 X2 X6)))\wedge(\neg( \\ & \neg v1\_xboole\_0 X15)\wedge(v1\_xboole\_0 (k3\_gate\_1 X3 X7)))\wedge(\neg(\neg v1\_xboole\_0 \\ & X16)\wedge(v1\_xboole\_0 (k3\_gate\_1 X4 X8)))\wedge(\neg(\neg v1\_xboole\_0 X17)\wedge \\ & (v1\_xboole\_0 (k18\_gate\_1 X0 X13 X14 X15 X16)))\wedge(\neg(\neg v1\_xboole\_0 \\ & X18)\wedge(v1\_xboole\_0 (k3\_gate\_1 X12 X17)))\wedge(\neg(\neg v1\_xboole\_0 (k3\_gate\_1 \\ & X12 X17))\wedge(v1\_xboole\_0 X18))\wedge(\neg(\neg(\neg v1\_xboole\_0 X12)\wedge(v1\_xboole\_0 \\ & X18))\wedge(\neg(\neg v1\_xboole\_0 X18)\wedge(v1\_xboole\_0 X12))))))))) \end{aligned}$$