

t24\_gate\_1  
(TMRcbybvEiKADrXq8t9j28FSdBmfgL8tXqo)

October 27, 2020

Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k18\_gate\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k1\_gate\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$v1\_xboole\_0 \ k1\_xboole\_0 \tag{1}$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 \ X0) \Rightarrow (\neg v1\_xboole\_0 \ (k1\_gate\_1 \ X0)) \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(\neg(\neg v1\_xboole\_0 \\ & X0) \wedge ((\neg v1\_xboole\_0 \ X1) \wedge ((\neg v1\_xboole\_0 \ X2) \wedge ((\neg v1\_xboole\_0 \ X3) \wedge \\ & ((\neg v1\_xboole\_0 \ X4) \wedge (k18\_gate\_1 \ X0 \ X1 \ X2 \ X3 \ X4 \neq k1\_gate\_1 \ k1\_xboole\_0)))))) \wedge \\ & ((\neg(\neg v1\_xboole\_0 \ X0) \wedge ((\neg v1\_xboole\_0 \ X1) \wedge ((\neg v1\_xboole\_0 \ X2) \wedge \\ & ((\neg v1\_xboole\_0 \ X3) \wedge (\neg v1\_xboole\_0 \ X4)))))) \Rightarrow (k18\_gate\_1 \ X0 \ X1 \ X2 \\ & X3 \ X4 = k1\_xboole\_0)) \end{aligned} \tag{3}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(\neg v1\_xboole\_0 \\ & (k18\_gate\_1 \ X0 \ X1 \ X2 \ X3 \ X4)) \Leftrightarrow ((\neg v1\_xboole\_0 \ X0) \wedge ((\neg v1\_xboole\_0 \\ & X1) \wedge ((\neg v1\_xboole\_0 \ X2) \wedge ((\neg v1\_xboole\_0 \ X3) \wedge (\neg v1\_xboole\_0 \ X4)))))) \end{aligned}$$