

# t25\_gate\_1 (TMPDdQn- pqS3WX3ziWxfHov5GGBDFotcAW9b)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k19\_gate\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k15\_gate\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_gate\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. (\neg(\neg v1\_xboole\_0 \\ & (k15\_gate\_1 X0 X1 X2 X3)) \wedge ((v1\_xboole\_0 X0) \wedge ((v1\_xboole\_0 X1) \wedge \\ & ((v1\_xboole\_0 X2) \wedge (v1\_xboole\_0 X3)))))) \wedge (\neg(\neg(v1\_xboole\_0 X0) \wedge \\ & ((v1\_xboole\_0 X1) \wedge ((v1\_xboole\_0 X2) \wedge (v1\_xboole\_0 X3)))))) \wedge (v1\_xboole\_0 \\ & (k15\_gate\_1 X0 X1 X2 X3)) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. ((\neg(v1\_xboole\_0 \\ & X0) \wedge ((v1\_xboole\_0 X1) \wedge ((v1\_xboole\_0 X2) \wedge ((v1\_xboole\_0 X3) \wedge \\ & (v1\_xboole\_0 X4)))))) \Rightarrow (k19\_gate\_1 X0 X1 X2 X3 X4 = k1\_gate\_1 k1\_xboole\_0)) \wedge \\ & (\neg(v1\_xboole\_0 X0) \wedge ((v1\_xboole\_0 X1) \wedge ((v1\_xboole\_0 X2) \wedge ((v1\_xboole\_0 \\ & X3) \wedge ((v1\_xboole\_0 X4) \wedge (k19\_gate\_1 X0 X1 X2 X3 X4 \neq k1\_xboole\_0)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((\neg(v1\_xboole\_0 \\ & X0) \wedge ((v1\_xboole\_0 X1) \wedge ((v1\_xboole\_0 X2) \wedge (v1\_xboole\_0 X3)))) \Rightarrow \\ & (k15\_gate\_1 X0 X1 X2 X3 = k1\_gate\_1 k1\_xboole\_0)) \wedge (\neg(v1\_xboole\_0 \\ & X0) \wedge ((v1\_xboole\_0 X1) \wedge ((v1\_xboole\_0 X2) \wedge ((v1\_xboole\_0 X3) \wedge \\ & (k15\_gate\_1 X0 X1 X2 X3 \neq k1\_xboole\_0)))))) \end{aligned} \tag{3}$$

## Theorem 1

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (\neg(\neg v1\_xboole\_0 \\ & (k19\_gate\_1 X0 X1 X2 X3 X4)) \wedge ((v1\_xboole\_0 X0) \wedge ((v1\_xboole\_0 X1) \wedge \\ & ((v1\_xboole\_0 X2) \wedge ((v1\_xboole\_0 X3) \wedge (v1\_xboole\_0 X4)))))) \wedge \\ & (\neg(\neg(v1\_xboole\_0 X0) \wedge ((v1\_xboole\_0 X1) \wedge ((v1\_xboole\_0 X2) \wedge \\ & (v1\_xboole\_0 X3) \wedge (v1\_xboole\_0 X4)))))) \wedge (v1\_xboole\_0 (k19\_gate\_1 \\ & X0 X1 X2 X3 X4)) \end{aligned}$$