

## t17\_circuit1

(TMNo86E8nYuoUpCc6jzVKU5eBgQJYYnYWgv)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v8\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_msafree2 : \iota \Rightarrow o$  be given. Let  $v5\_msafree2 : \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $v4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_msafree2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_circuit1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_circuit1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v2\_membered : \iota \Rightarrow o$  be given. Let  $v2\_xxreal\_2 : \iota \Rightarrow o$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $k1\_xxreal\_2 : \iota \Rightarrow \iota$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v3\_membered : \iota \Rightarrow o$  be given. Let  $v4\_membered : \iota \Rightarrow o$  be given. Let  $v1\_xxreal\_2 : \iota \Rightarrow o$  be given. Let  $v5\_membered : \iota \Rightarrow o$  be given. Let  $v6\_membered : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. \neg (X0 \in X1) \wedge (v1\_xboole\_0 X1) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge (v8\_struct\_0 X0) \wedge \\ & ((\neg v11\_struct\_0 X0) \wedge (v2\_msafree2 X0) \wedge (v5\_msafree2 X0) \wedge (l1\_msualg\_1 \\ & X0)))) \wedge ((v4\_msualg\_1 X1 X0) \wedge ((v4\_msafree2 X1 X0) \wedge (l3\_msualg\_1 \\ & X1 X0)))) \Rightarrow (v7\_ordinal1 (k7\_circuit1 X0 X1)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge (\neg v11\_struct\_0 \\ & X0) \wedge (v5\_msafree2 X0) \wedge (l1\_msualg\_1 X0))) \wedge (((v4\_msualg\_1 X1 \\ & X0) \wedge (v4\_msafree2 X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \wedge (m1\_subset\_1 \\ & X2 (u1\_struct\_0 X0))) \Rightarrow (v7\_ordinal1 (k6\_circuit1 X0 X1 X2)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v2\_membered\ X0)\wedge(v2\_xxreal\_2\ X0))\Rightarrow(\forall X1. \\ & (v1\_xxreal\_0\ X1)\Rightarrow((X1 = k1\_xxreal\_2\ X0)\Leftrightarrow((X1 \in X0)\wedge(\forall X2. \\ & (v1\_xxreal\_0\ X2)\Rightarrow((X2 \in X0)\Rightarrow(r1\_xxreal\_0\ X2\ X1)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v8\_struct\_0\ X0)\wedge((\neg v11\_struct\_0 \\ & X0)\wedge((v2\_msafree2\ X0)\wedge((v5\_msafree2\ X0)\wedge(l1\_msualg\_1\ X0))))))\Rightarrow \\ & (\forall X1.((v4\_msualg\_1\ X1\ X0)\wedge((v4\_msafree2\ X1\ X0)\wedge(l3\_msualg\_1 \\ & X1\ X0)))\Rightarrow(\forall X2.(v7\_ordinal1\ X2)\Rightarrow((X2 = k7\_circuit1\ X0\ X1)\Leftrightarrow \\ & (\exists X3.((\neg v1\_xboole\_0\ X3)\wedge((v1\_finset\_1\ X3)\wedge(m1\_subset\_1 \\ & X3\ (k1\_zfmisc\_1\ k5\_numbers))))\wedge((X3 = ReplSep\ (toset\ (\lambda X4 : \\ & \iota.m1\_subset\_1\ X4\ (u1\_struct\_0\ X0)))\ (\lambda X4 : \iota.X4 \in u1\_struct\_0 \\ & X0)\ (\lambda X4 : \iota.k6\_circuit1\ X0\ X1\ X4))\wedge(X2 = k1\_xxreal\_2\ X3)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.(v3\_membered\ X0)\Rightarrow(v2\_membered\ X0) \quad (7)$$

Assume the following.

$$\forall X0.(v4\_membered\ X0)\Rightarrow(v3\_membered\ X0) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v2\_membered\ X0)\wedge((\neg v1\_xboole\_0\ X0)\wedge(v1\_finset\_1 \\ & X0)))\Rightarrow((v2\_membered\ X0)\wedge((\neg v1\_xboole\_0\ X0)\wedge((v1\_xxreal\_2\ X0)\wedge \\ & (v2\_xxreal\_2\ X0)))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(v1\_xxreal\_0\ X0) \quad (10)$$

Assume the following.

$$\forall X0.(v5\_membered\ X0)\Rightarrow(v4\_membered\ X0) \quad (11)$$

Assume the following.

$$\forall X0.(v6\_membered\ X0)\Rightarrow(v5\_membered\ X0) \quad (12)$$

Assume the following.

$$\forall X0.(m1\_subset\_1\ X0\ (k1\_zfmisc\_1\ k5\_numbers))\Rightarrow(v6\_membered\ X0) \quad (13)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v8\_struct\_0\ X0)\wedge((\neg v11\_struct\_0 \\ & X0)\wedge((v2\_msafree2\ X0)\wedge((v5\_msafree2\ X0)\wedge(l1\_msualg\_1\ X0))))))\Rightarrow \\ & (\forall X1.((v4\_msualg\_1\ X1\ X0)\wedge((v4\_msafree2\ X1\ X0)\wedge(l3\_msualg\_1 \\ & X1\ X0)))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(r1\_xxreal\_0 \\ & (k6\_circuit1\ X0\ X1\ X2)\ (k7\_circuit1\ X0\ X1)))) \end{aligned}$$