

t17\_bciideal  
(TMVAB3WWJSOeEQAi6fEe2XWDhFpQWhTmLhMN)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v3\_bcialg\_1 : \iota \Rightarrow o$  be given. Let  $v4\_bcialg\_1 : \iota \Rightarrow o$  be given. Let  $v5\_bcialg\_1 : \iota \Rightarrow o$  be given. Let  $v7\_bcialg\_1 : \iota \Rightarrow o$  be given. Let  $l2\_bcialg\_1 : \iota \Rightarrow o$  be given. Let  $m2\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v12\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_bcialg\_1 X0) \wedge ((v4\_bcialg\_1 \\ X0) \wedge ((v5\_bcialg\_1 X0) \wedge ((v7\_bcialg\_1 X0) \wedge (l2\_bcialg\_1 X0)))))) \Rightarrow \\ ((v12\_bcialg\_1 (u1\_struct\_0 X0) X0) \wedge (m2\_bcialg\_1 (u1\_struct\_0 \\ X0) X0)) \end{aligned} \quad (1)$$

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.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l2\_bcialg\_1 X0)) \Rightarrow (((\neg v2\_struct\_0 \\ X0) \wedge ((v3\_bcialg\_1 X0) \wedge ((v4\_bcialg\_1 X0) \wedge ((v5\_bcialg\_1 X0) \wedge \\ ((v7\_bcialg\_1 X0) \wedge (l2\_bcialg\_1 X0)))))) \Leftrightarrow ((v5\_bcialg\_1 X0) \wedge \\ ((v7\_bcialg\_1 X0) \wedge (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow \\ (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 \\ X3 (u1\_struct\_0 X0)) \Rightarrow ((k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 (k1\_bcialg\_1 \\ X0 X1 X2) (k1\_bcialg\_1 X0 X1 X3)) (k1\_bcialg\_1 X0 X3 X2) = k4\_struct\_0 \\ X0) \wedge (k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X1 (k1\_bcialg\_1 X0 X1 X2)) X2 = \\ k4\_struct\_0 X0)))))))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge((\neg v1\_xboole\_0 X1)\wedge \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0))))\Rightarrow(\forall X2.(m2\_subset\_1 \\ X2 X0 X1)\Leftrightarrow(m1\_subset\_1 X2 X1)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge((\neg v1\_xboole\_0 X1)\wedge \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0))))\Rightarrow(\forall X2.(m2\_subset\_1 \\ X2 X0 X1)\Rightarrow(m1\_subset\_1 X2 X0)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0)\wedge((v3\_bcialg\_1 X0)\wedge((v4\_bcialg\_1 \\ X0)\wedge((v5\_bcialg\_1 X0)\wedge((v7\_bcialg\_1 X0)\wedge(l2\_bcialg\_1 X0))))))\Rightarrow \\ (\forall X1.(m2\_bcialg\_1 X1 X0)\Rightarrow((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 \\ X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge(l2\_bcialg\_1 X0))\wedge \\ (m1\_subset\_1 X1 (u1\_struct\_0 X0)))\Rightarrow(m1\_subset\_1 (k2\_bcialg\_1 \\ X0 X1) (u1\_struct\_0 X0)) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0)\wedge(l2\_bcialg\_1 X0))\Rightarrow(\forall X1. \\ (m1\_subset\_1 X1 (u1\_struct\_0 X0))\Rightarrow(k2\_bcialg\_1 X0 X1 = k1\_bcialg\_1 \\ X0 (k4\_struct\_0 X0 X1))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0)\wedge((v3\_bcialg\_1 X0)\wedge((v4\_bcialg\_1 \\ X0)\wedge((v5\_bcialg\_1 X0)\wedge((v7\_bcialg\_1 X0)\wedge(l2\_bcialg\_1 X0))))))\Rightarrow \\ (\forall X1.(m2\_bcialg\_1 X1 X0)\Rightarrow((v12\_bcialg\_1 X1 X0)\Leftrightarrow(\forall X2. \\ (m2\_subset\_1 X2 (u1\_struct\_0 X0) X1)\Rightarrow(k2\_bcialg\_1 X0 X2 \in X1)))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0)\wedge((v3\_bcialg\_1 X0)\wedge((v4\_bcialg\_1 \\ X0)\wedge((v5\_bcialg\_1 X0)\wedge((v7\_bcialg\_1 X0)\wedge(l2\_bcialg\_1 X0))))))\Rightarrow \\ (\forall X1.((\neg v1\_xboole\_0 X1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (u1\_struct\_0 X0))))\Rightarrow((m2\_bcialg\_1 X1 X0)\Leftrightarrow((k4\_struct\_0 X0 \in X1)\wedge \\ (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0))\Rightarrow(\forall X3.(m1\_subset\_1 \\ X3 (u1\_struct\_0 X0))\Rightarrow(((k1\_bcialg\_1 X0 X2 X3 \in X1)\wedge(X3 \in X1))\Rightarrow(X2 \in \\ X1))))))) \end{aligned} \quad (11)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_bcialg\_1 X0) \wedge ((v4\_bcialg\_1 \\ & X0) \wedge ((v5\_bcialg\_1 X0) \wedge ((v7\_bcialg\_1 X0) \wedge (l2\_bcialg\_1 X0)))))) \Rightarrow \\ & (\forall X1.(m2\_bcialg\_1 X1 X0) \Rightarrow ((\forall X2.(m1\_subset\_1 X2 \\ & (u1\_struct\_0 X0)) \Rightarrow (k1\_bcialg\_1 X0 X2 (k1\_bcialg\_1 X0 (k4\_struct\_0 \\ & X0) X2) \in X1)) \Rightarrow ((v12\_bcialg\_1 X1 X0) \wedge (m2\_bcialg\_1 X1 X0)))) \end{aligned}$$