

t49\_bciideal  
(TMKEfHj74qoJNrJpKvRktYynA26PmaHemGe)

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  $v8\_bcialg\_1 : \iota \Rightarrow o$  be given. Let  $l2\_bcialg\_1 : \iota \Rightarrow o$  be given. Let  $m2\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_bciideal : \iota \Rightarrow \iota \Rightarrow o$  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  $r1\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $v12\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow o$  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 ((v8\_bcialg\_1 X0) \wedge \\
& (l2\_bcialg\_1 X0)))))) \Rightarrow (((v3\_bciideal (k1\_tarski (k4\_struct\_0 \\
& X0)) X0) \wedge (m2\_bcialg\_1 (k1\_tarski (k4\_struct\_0 X0)) X0)) \Rightarrow ((\forall X1. \\
& (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. (m1\_subset\_1 X2 \\
& (u1\_struct\_0 X0)) \Rightarrow ((k1\_bcialg\_1 X0 X1 X2 = X1) \Leftrightarrow (k1\_bcialg\_1 X0 \\
& X2 (k1\_bcialg\_1 X0 X2 X1) = k4\_struct\_0 X0)))) \wedge ((\forall X1. (m1\_subset\_1 \\
& X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 \\
& X0)) \Rightarrow ((k1\_bcialg\_1 X0 X1 X2 = X1) \Rightarrow (k1\_bcialg\_1 X0 X2 X1 = X2)))) \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 ((r1\_bcialg\_1 X0 X2 X3) \Rightarrow (k1\_bcialg\_1 X0 (k1\_bcialg\_1 \\
& X0 X3 X1) (k1\_bcialg\_1 X0 X3 X2) = k1\_bcialg\_1 X0 X2 X1)))))) \wedge ((\forall X1. \\
& (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. (m1\_subset\_1 X2 \\
& (u1\_struct\_0 X0)) \Rightarrow ((k1\_bcialg\_1 X0 X1 (k1\_bcialg\_1 X0 X2 (k1\_bcialg\_1 \\
& X0 X2 X1)) = k1\_bcialg\_1 X0 X1 X2) \wedge (k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 \\
& X1 X2) (k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X1 X2) X1) = k1\_bcialg\_1 X0 \\
& X1 X2)))) \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 ((r1\_bcialg\_1 X0 X1 X3) \Rightarrow (k1\_bcialg\_1 X0 (k1\_bcialg\_1 \\
& X0 X3 X2) (k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X3 X2) (k1\_bcialg\_1 X0 X3 \\
& X1)) = k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X3 X2) (k1\_bcialg\_1 X0 X1 X2))))))))))
\end{aligned}$$

(1)

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_bcialg\_1 X0) \wedge ((v4\_bcialg\_1 \\ & X0) \wedge ((v5\_bcialg\_1 X0) \wedge ((v7\_bcialg\_1 X0) \wedge (l2\_bcialg\_1 X0)))))) \Rightarrow \\ & ((v12\_bcialg\_1 (k1\_tarski (k4\_struct\_0 X0)) X0) \wedge (m2\_bcialg\_1 \\ & (k1\_tarski (k4\_struct\_0 X0)) X0)) \end{aligned} \quad (2)$$

**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 ((v8\_bcialg\_1 X0) \wedge \\ & (l2\_bcialg\_1 X0)))))) \Rightarrow ((\forall X1.(m2\_bcialg\_1 X1 X0) \Rightarrow ((v3\_bciideal \\ & X1 X0) \wedge (m2\_bcialg\_1 X1 X0))) \Rightarrow ((\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((k1\_bcialg\_1 \\ & X0 X1 X2 = X1) \Leftrightarrow (k1\_bcialg\_1 X0 X2 (k1\_bcialg\_1 X0 X2 X1) = k4\_struct\_0 \\ & X0)))) \wedge ((\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((k1\_bcialg\_1 X0 X1 X2 = X1) \Rightarrow \\ & (k1\_bcialg\_1 X0 X2 X1 = X2)))) \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 ((r1\_bcialg\_1 X0 X2 X3) \Rightarrow (k1\_bcialg\_1 \\ & X0 (k1\_bcialg\_1 X0 X3 X1) (k1\_bcialg\_1 X0 X3 X2) = k1\_bcialg\_1 X0 X2 \\ & X1)))) \wedge ((\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((k1\_bcialg\_1 X0 X1 (k1\_bcialg\_1 \\ & X0 X2 (k1\_bcialg\_1 X0 X2 X1)) = k1\_bcialg\_1 X0 X1 X2) \wedge (k1\_bcialg\_1 \\ & X0 (k1\_bcialg\_1 X0 X1 X2) (k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X1 X2) X1) = \\ & k1\_bcialg\_1 X0 X1 X2)))) \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 ((r1\_bcialg\_1 X0 X1 X3) \Rightarrow (k1\_bcialg\_1 \\ & X0 (k1\_bcialg\_1 X0 X3 X2) (k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X3 X2) ( \\ & k1\_bcialg\_1 X0 X3 X1)) = k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X3 X2) (k1\_bcialg\_1 \\ & X0 X1 X2)))))))))) \end{aligned}$$