

t14\_lopban\_2 (TM-  
Gou8St8yrfMDMvVLTHaBqfnffAuNELF9K)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v2\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v5\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v6\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v7\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v8\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_normsp\_0 : \iota \Rightarrow o$  be given. Let  $v4\_normsp\_0 : \iota \Rightarrow o$  be given. Let  $v2\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $l1\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $k7\_lopban\_2 : \iota \Rightarrow \iota$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  be given. Let  $v4\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v5\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $l6\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k6\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v36\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l3\_struct\_0 : \iota \Rightarrow o$  be given. Let  $u3\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $u2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l5\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l4\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l4\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l3\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l1\_algstr\_0 : \iota \Rightarrow o$

be given. Let  $v10\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_1 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\
& ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\
& X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\
& (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 (k7\_lopban\_2 X0))) \Rightarrow \\
& (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 (k7\_lopban\_2 X0))) \Rightarrow \\
& (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 (k7\_lopban\_2 X0))) \Rightarrow \\
& ((k1\_algstr\_0 (k7\_lopban\_2 X0) X1 X2 = k1\_algstr\_0 (k7\_lopban\_2 \\
& X0) X2 X1) \wedge ((k1\_algstr\_0 (k7\_lopban\_2 X0) (k1\_algstr\_0 (k7\_lopban\_2 \\
& X0) X1 X2) X3 = k1\_algstr\_0 (k7\_lopban\_2 X0) X1 (k1\_algstr\_0 (k7\_lopban\_2 \\
& X0) X2 X3)) \wedge ((k1\_algstr\_0 (k7\_lopban\_2 X0) X1 (k4\_struct\_0 (k7\_lopban\_2 \\
& X0)) = X1) \wedge ((\exists X4. (m1\_subset\_1 X4 (u1\_struct\_0 (k7\_lopban\_2 \\
& X0))) \wedge (k1\_algstr\_0 (k7\_lopban\_2 X0) X1 X4 = k4\_struct\_0 (k7\_lopban\_2 \\
& X0))) \wedge ((k6\_algstr\_0 (k7\_lopban\_2 X0) (k6\_algstr\_0 (k7\_lopban\_2 \\
& X0) X1 X2) X3 = k6\_algstr\_0 (k7\_lopban\_2 X0) X1 (k6\_algstr\_0 (k7\_lopban\_2 \\
& X0) X2 X3)) \wedge ((k6\_algstr\_0 (k7\_lopban\_2 X0) X1 (k5\_struct\_0 (k7\_lopban\_2 \\
& X0)) = X1) \wedge ((k6\_algstr\_0 (k7\_lopban\_2 X0) (k5\_struct\_0 (k7\_lopban\_2 \\
& X0)) X1 = X1) \wedge ((k6\_algstr\_0 (k7\_lopban\_2 X0) X1 (k1\_algstr\_0 (k7\_lopban\_2 \\
& X0) X2 X3) = k1\_algstr\_0 (k7\_lopban\_2 X0) (k6\_algstr\_0 (k7\_lopban\_2 \\
& X0) X1 X2) (k6\_algstr\_0 (k7\_lopban\_2 X0) X1 X3)) \wedge (k6\_algstr\_0 ( \\
& k7\_lopban\_2 X0) (k1\_algstr\_0 (k7\_lopban\_2 X0) X2 X3) X1 = k1\_algstr\_0 \\
& (k7\_lopban\_2 X0) (k6\_algstr\_0 (k7\_lopban\_2 X0) X2 X1) (k6\_algstr\_0 \\
& (k7\_lopban\_2 X0) X3 X1)))))))))) \Rightarrow
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\
& ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\
& X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\
& ((\neg v2\_struct\_0 (k7\_lopban\_2 X0)) \wedge (v36\_algstr\_0 (k7\_lopban\_2 \\
& X0)))
\end{aligned} \tag{2}$$

Assume the following.

$$\forall X0. (l3\_struct\_0 X0) \Rightarrow (m1\_subset\_1 (u3\_struct\_0 X0) (u1\_struct\_0 X0)) \tag{3}$$

Assume the following.

$$\forall X0. (l2\_struct\_0 X0) \Rightarrow (m1\_subset\_1 (u2\_struct\_0 X0) (u1\_struct\_0 X0)) \tag{4}$$

Assume the following.

$$\forall X0. (l6\_algstr\_0 X0) \Rightarrow ((l2\_algstr\_0 X0) \wedge (l5\_algstr\_0 X0)) \tag{5}$$

Assume the following.

$$\forall X0.(l5\_algstr\_0 X0) \Rightarrow ((l4\_algstr\_0 X0) \wedge (l4\_struct\_0 X0)) \quad (6)$$

Assume the following.

$$\forall X0.(l4\_algstr\_0 X0) \Rightarrow ((l3\_struct\_0 X0) \wedge (l3\_algstr\_0 X0)) \quad (7)$$

Assume the following.

$$\forall X0.(l2\_algstr\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l1\_algstr\_0 X0)) \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0. (&(\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ &X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\ &((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\ &X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\ &(l6\_algstr\_0 (k7\_lopban\_2 X0)) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0. (&(\neg v2\_struct\_0 X0) \wedge (l6\_algstr\_0 X0)) \Rightarrow ((v5\_vectsp\_1 \\ &X0) \Leftrightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ &(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ &(u1\_struct\_0 X0)) \Rightarrow ((k6\_algstr\_0 X0 X1 (k1\_algstr\_0 X0 X2 X3) = k1\_algstr\_0 \\ &X0 (k6\_algstr\_0 X0 X1 X2) (k6\_algstr\_0 X0 X1 X3)) \wedge (k6\_algstr\_0 X0 \\ &(k1\_algstr\_0 X0 X2 X3) X1 = k1\_algstr\_0 X0 (k6\_algstr\_0 X0 X2 X1) ( \\ &k6\_algstr\_0 X0 X3 X1)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0. (&(\neg v2\_struct\_0 X0) \wedge (l4\_algstr\_0 X0)) \Rightarrow ((v4\_vectsp\_1 \\ &X0) \Leftrightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow ((k6\_algstr\_0 \\ &X0 X1 (k5\_struct\_0 X0) = X1) \wedge (k6\_algstr\_0 X0 (k5\_struct\_0 X0) X1 = \\ &X1)))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0. (l2\_algstr\_0 X0) \Rightarrow ((v4\_rlvect\_1 X0) \Leftrightarrow (\forall X1. ( \\ &m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k1\_algstr\_0 X0 X1 (k4\_struct\_0 \\ &X0) = X1))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0. (l1\_algstr\_0 X0) \Rightarrow ((v3\_rlvect\_1 X0) \Leftrightarrow (\forall X1. ( \\ &m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. (m1\_subset\_1 X2 \\ &(u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow \\ &(k1\_algstr\_0 X0 (k1\_algstr\_0 X0 X1 X2) X3 = k1\_algstr\_0 X0 X1 (k1\_algstr\_0 \\ &X0 X2 X3)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0.(l3\_algstr\_0 X0) \Rightarrow ((v3\_group\_1 X0) \Leftrightarrow (\forall X1.(m1\_subset\_1 \\ X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (k6\_algstr\_0 \\ X0 (k6\_algstr\_0 X0 X1 X2) X3 = k6\_algstr\_0 X0 X1 (k6\_algstr\_0 X0 X2 \\ X3)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_algstr\_0 X0) \Rightarrow ((v2\_rlvect\_1 X0) \Leftrightarrow (\forall X1.( \\ m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\ (u1\_struct\_0 X0)) \Rightarrow (k1\_algstr\_0 X0 X1 X2 = k1\_algstr\_0 X0 X2 X1)))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.(l2\_algstr\_0 X0) \Rightarrow ((v13\_algstr\_0 X0) \Leftrightarrow (\forall X1. \\ (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (v10\_algstr\_0 X1 X0))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} \forall X0.(l2\_algstr\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ X0)) \Rightarrow ((v10\_algstr\_0 X1 X0) \Leftrightarrow (\exists X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ X0)) \wedge (k1\_algstr\_0 X0 X1 X2 = k4\_struct\_0 X0)))) \end{aligned} \quad (17)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\ ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\ X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\ ((\neg v2\_struct\_0 (k7\_lopban\_2 X0)) \wedge ((v13\_algstr\_0 (k7\_lopban\_2 \\ X0)) \wedge ((v2\_rlvect\_1 (k7\_lopban\_2 X0)) \wedge ((v3\_rlvect\_1 (k7\_lopban\_2 \\ X0)) \wedge ((v4\_rlvect\_1 (k7\_lopban\_2 X0)) \wedge ((v3\_group\_1 (k7\_lopban\_2 \\ X0)) \wedge ((v4\_vectsp\_1 (k7\_lopban\_2 X0)) \wedge ((v5\_vectsp\_1 (k7\_lopban\_2 \\ X0)) \wedge (l6\_algstr\_0 (k7\_lopban\_2 X0)))))))))) \end{aligned}$$