

## t39\_lopban\_4

(TMdQnLhPg55MVKAq1tMF4pBL6F85DiVHqkX)

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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  $v2\_funcsdom : \iota \Rightarrow o$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  be given. Let  $v1\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v3\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v5\_lopban\_2 : \iota \Rightarrow o$  be given. Let  $l1\_lopban\_2 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v25\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k10\_lopban\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  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  $l6\_algstr\_0 : \iota \Rightarrow o$  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  $l1\_funcsdom : \iota \Rightarrow o$  be given. Let  $l1\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $l1\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_vectsp\_1 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ & X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\ & ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\ & X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge ((v2\_funcsdom X0) \wedge \\ & ((v3\_group\_1 X0) \wedge ((v1\_vectsp\_1 X0) \wedge ((v3\_vectsp\_1 X0) \wedge ((v5\_lopban\_2 \\ & X0) \wedge (l1\_lopban\_2 X0)))))))))))))) \Rightarrow (\forall X1. (m1\_subset\_1 \\ & X1 (u1\_struct\_0 X0)) \Rightarrow ((k6\_algstr\_0 X0 (k10\_lopban\_4 X0 X1) (k10\_lopban\_4 \\ & X0 (k4\_algstr\_0 X0 X1)) = k5\_struct\_0 X0) \wedge (k6\_algstr\_0 X0 (k10\_lopban\_4 \\ & X0 (k4\_algstr\_0 X0 X1)) (k10\_lopban\_4 X0 X1) = k5\_struct\_0 X0))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. (l6\_algstr\_0 X0) \Rightarrow ((l2\_algstr\_0 X0) \wedge (l5\_algstr\_0 X0)) \quad (2)$$

Assume the following.

$$\forall X0. (l5\_algstr\_0 X0) \Rightarrow ((l4\_algstr\_0 X0) \wedge (l4\_struct\_0 X0)) \quad (3)$$

Assume the following.

$$\forall X0.(l1\_lopban\_2 X0) \Rightarrow ((l1\_funcsdom X0) \wedge (l1\_normsp\_1 X0)) \quad (4)$$

Assume the following.

$$\forall X0.(l1\_funcsdom X0) \Rightarrow ((l6\_algstr\_0 X0) \wedge (l1\_rlvect\_1 X0)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((l2\_algstr\_0 X0) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow (m1\_subset\_1 (k4\_algstr\_0 X0 X1) (u1\_struct\_0 X0)) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge (v13\_algstr\_0 X0) \wedge \\ & ((v2\_rlvect\_1 X0) \wedge (v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge (v5\_rlvect\_1 \\ & X0) \wedge (v6\_rlvect\_1 X0) \wedge (v7\_rlvect\_1 X0) \wedge (v8\_rlvect\_1 X0) \wedge \\ & ((v3\_normsp\_0 X0) \wedge (v4\_normsp\_0 X0) \wedge (v2\_normsp\_1 X0) \wedge (v2\_funcsdom \\ & X0) \wedge (v3\_group\_1 X0) \wedge (v1\_vectsp\_1 X0) \wedge (v3\_vectsp\_1 X0) \wedge \\ & (v5\_lopban\_2 X0) \wedge (l1\_lopban\_2 X0)))))) \wedge (m1\_subset\_1 \\ & X1 (u1\_struct\_0 X0))) \Rightarrow (m1\_subset\_1 (k10\_lopban\_4 X0 X1) (u1\_struct\_0 \\ & X0)) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (v3\_group\_1 X0) \wedge (v4\_vectsp\_1 \\ & X0) \wedge (l4\_algstr\_0 X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow ((v25\_algstr\_0 X1 X0) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ & X0)) \Rightarrow ((X2 = k9\_algstr\_0 X0 X1) \Leftrightarrow ((k6\_algstr\_0 X0 X1 X2 = k5\_struct\_0 \\ & X0) \wedge (k6\_algstr\_0 X0 X2 X1 = k5\_struct\_0 X0)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (v3\_group\_1 X0) \wedge (v4\_vectsp\_1 \\ & X0) \wedge (l4\_algstr\_0 X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow ((v25\_algstr\_0 X1 X0) \Leftrightarrow (\exists X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ & X0)) \wedge ((k6\_algstr\_0 X0 X1 X2 = k5\_struct\_0 X0) \wedge (k6\_algstr\_0 X0 X2 \\ & X1 = k5\_struct\_0 X0)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l1\_lopban\_2 X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v13\_algstr\_0 \\
& X0) \wedge (v2\_rlvect\_1 X0) \wedge (v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge \\
& (v5\_rlvect\_1 X0) \wedge (v6\_rlvect\_1 X0) \wedge (v7\_rlvect\_1 X0) \wedge (v8\_rlvect\_1 \\
& X0) \wedge (v3\_normsp\_0 X0) \wedge (v4\_normsp\_0 X0) \wedge (v2\_normsp\_1 X0) \wedge \\
& ((v2\_funcsdom X0) \wedge ((v3\_group\_1 X0) \wedge ((v1\_vectsp\_1 X0) \wedge (v3\_vectsp\_1 \\
& X0) \wedge (v5\_lopban\_2 X0)))))) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge ( \\
& (v13\_algstr\_0 X0) \wedge (v2\_rlvect\_1 X0) \wedge (v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 \\
& X0) \wedge (v5\_rlvect\_1 X0) \wedge (v6\_rlvect\_1 X0) \wedge (v7\_rlvect\_1 X0) \wedge \\
& (v8\_rlvect\_1 X0) \wedge (v3\_normsp\_0 X0) \wedge (v4\_normsp\_0 X0) \wedge (v2\_normsp\_1 \\
& X0) \wedge (v2\_funcsdom X0) \wedge (v3\_group\_1 X0) \wedge (v1\_vectsp\_1 X0) \wedge ( \\
& (v3\_vectsp\_1 X0) \wedge (v4\_vectsp\_1 X0) \wedge (v5\_lopban\_2 X0)))))) \quad (10)
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (v13\_algstr\_0 X0) \wedge (v2\_rlvect\_1 \\
& X0) \wedge (v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge (v5\_rlvect\_1 X0) \wedge \\
& ((v6\_rlvect\_1 X0) \wedge (v7\_rlvect\_1 X0) \wedge (v8\_rlvect\_1 X0) \wedge (v3\_normsp\_0 \\
& X0) \wedge (v4\_normsp\_0 X0) \wedge (v2\_normsp\_1 X0) \wedge (v2\_funcsdom X0) \wedge \\
& ((v3\_group\_1 X0) \wedge (v1\_vectsp\_1 X0) \wedge (v3\_vectsp\_1 X0) \wedge (v5\_lopban\_2 \\
& X0) \wedge (l1\_lopban\_2 X0)))))) \Rightarrow (\forall X1.(m1\_subset\_1 \\
& X1 (u1\_struct\_0 X0)) \Rightarrow ((v25\_algstr\_0 (k10\_lopban\_4 X0 X1) X0) \wedge \\
& ((k9\_algstr\_0 X0 (k10\_lopban\_4 X0 X1) = k10\_lopban\_4 X0 (k4\_algstr\_0 \\
& X0 X1)) \wedge (v25\_algstr\_0 (k10\_lopban\_4 X0 (k4\_algstr\_0 X0 X1)) X0) \wedge \\
& (k9\_algstr\_0 X0 (k10\_lopban\_4 X0 (k4\_algstr\_0 X0 X1)) = k10\_lopban\_4 \\
& X0 X1))))))
\end{aligned}$$