

## t30\_mod\_4

(TMJQ4ekXNxYv2PXfjSSh6ZbQj4kUL2yTwAo)

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Let  $v2\_struct.0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr.0 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect.1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect.1 : \iota \Rightarrow o$  be given. Let  $l6\_algstr.0 : \iota \Rightarrow o$  be given. Let  $v4\_vectsp.1 : \iota \Rightarrow o$  be given. Let  $v1\_funct.1 : \iota \Rightarrow o$  be given. Let  $v1\_funct.2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct.0 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset.1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc.1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc.1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_mod.4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_mod.4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_mod.4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_mod.4 : \iota \Rightarrow \iota$  be given. Let  $v1\_ringcat1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_mod.4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v36\_algstr.0 : \iota \Rightarrow o$  be given. Let  $v2\_funct.1 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct.0 X0) \wedge ((v13\_algstr.0 X0) \wedge ((v3\_rlvect.1 \\ & \quad X0) \wedge ((v4\_rlvect.1 X0) \wedge (l6\_algstr.0 X0)))))) \Rightarrow (\forall X1.((\neg \\ & v2\_struct.0 X1) \wedge ((v13\_algstr.0 X1) \wedge ((v4\_vectsp.1 X1) \wedge ((v3\_rlvect.1 \\ & \quad X1) \wedge ((v4\_rlvect.1 X1) \wedge (l6\_algstr.0 X1)))))) \Rightarrow (\forall X2.(( \\ & \quad v1\_funct.1 X2) \wedge ((v1\_funct.2 X2 (u1\_struct.0 X0) (u1\_struct.0 \\ & \quad X1)) \wedge (m1\_subset.1 X2 (k1\_zfmisc.1 (k2\_zfmisc.1 (u1\_struct.0 \\ & \quad X0) (u1\_struct.0 X1)))))) \Rightarrow ((v1\_ringcat1 X2 X0 X1) \Leftrightarrow (v2\_mod.4 ( \\ & \quad k7\_mod.4 X0 X1 X2) X0 (k2\_mod.4 X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0.((\neg v2\_struct.0 X0) \wedge (l6\_algstr.0 X0)) \Rightarrow ((\neg v2\_struct.0 (k2\_mod.4 X0)) \wedge (v36\_algstr.0 (k2\_mod.4 X0))) \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2\_struct.0 X0) \wedge (l6\_algstr.0 \\ & \quad X0)) \wedge (((\neg v2\_struct.0 X1) \wedge (l6\_algstr.0 X1)) \wedge ((v1\_funct.1 X2) \wedge \\ & \quad ((v1\_funct.2 X2 (u1\_struct.0 X0) (u1\_struct.0 X1)) \wedge (m1\_subset.1 \\ & \quad X2 (k1\_zfmisc.1 (k2\_zfmisc.1 (u1\_struct.0 X0) (u1\_struct.0 X1))))))) \Rightarrow \\ & \quad ((v1\_funct.1 (k7\_mod.4 X0 X1 X2)) \wedge ((v1\_funct.2 (k7\_mod.4 X0 X1 \\ & \quad X2) (u1\_struct.0 X0) (u1\_struct.0 (k2\_mod.4 X1))) \wedge (m1\_subset.1 \\ & \quad (k7\_mod.4 X0 X1 X2) (k1\_zfmisc.1 (k2\_zfmisc.1 (u1\_struct.0 X0) \\ & \quad (u1\_struct.0 (k2\_mod.4 X1))))))) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l6\_algstr\_0 X0)) \Rightarrow ((v36\_algstr\_0 (k2\_mod\_4 X0)) \wedge (l6\_algstr\_0 (k2\_mod\_4 X0))) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l6\_algstr\_0 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge (l6\_algstr\_0 X1)) \Rightarrow (\forall X2.((v1\_funct\_1 \\ & X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow \\ & ((v4\_mod\_4 X2 X0 X1) \Leftrightarrow ((v2\_mod\_4 X2 X0 X1) \wedge (v2\_funct\_1 X2)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l6\_algstr\_0 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge (l6\_algstr\_0 X1)) \Rightarrow (\forall X2.((v1\_funct\_1 \\ & X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow \\ & ((v3\_mod\_4 X2 X0 X1) \Leftrightarrow ((v1\_ringcat1 X2 X0 X1) \wedge (v2\_funct\_1 X2)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l6\_algstr\_0 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge (l6\_algstr\_0 X1)) \Rightarrow (\forall X2.((v1\_funct\_1 \\ & X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow \\ & (k7\_mod\_4 X0 X1 X2 = X2))) \end{aligned} \quad (7)$$

### Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v3\_rlvect\_1 \\ & X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))) \Rightarrow (\forall X1.((\neg \\ & v2\_struct\_0 X1) \wedge ((v13\_algstr\_0 X1) \wedge ((v4\_vectsp\_1 X1) \wedge ((v3\_rlvect\_1 \\ & X1) \wedge ((v4\_rlvect\_1 X1) \wedge (l6\_algstr\_0 X1)))))) \Rightarrow (\forall X2.(( \\ & v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 \\ & X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\ & X0) (u1\_struct\_0 X1)))))) \Rightarrow ((v3\_mod\_4 X2 X0 X1) \Leftrightarrow (v4\_mod\_4 (k7\_mod\_4 \\ & X0 X1 X2) X0 (k2\_mod\_4 X1)))))) \end{aligned}$$