

# t30\_circrm1 (TMV-TMX- tECzk2GiaAGNQKd3WMUrKjsKpBra8)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $r3\_pua2mss1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l5\_struct\_0 : \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k10\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u2\_msualg\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_msualg\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \quad (2)$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (3)$$

Assume the following.

$$\forall X0. (l5\_struct\_0 X0) \Rightarrow (l1\_struct\_0 X0) \quad (4)$$

Assume the following.

$$\forall X0. (l1\_msualg\_1 X0) \Rightarrow (l5\_struct\_0 X0) \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. (r1\_tarski X0 X1) \Leftrightarrow (\forall X2. (X2 \in X0) \Rightarrow (X2 \in X1)) \quad (6)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(X1 = k10\_xtuple\_0 X0) \Leftrightarrow (\forall X2.(X2 \in X1) \Leftrightarrow (\exists X3.(X3 \in k9\_xtuple\_0 X0) \wedge (X2 = k1\_funct\_1 X0 X3)))) \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_msualg\_1 X0) \Rightarrow (\forall X1.(l1\_msualg\_1 X1) \Rightarrow (\forall X2. \\ ((v1\_relat\_1 X2) \wedge (v1\_funct\_1 X2)) \Rightarrow (\forall X3.((v1\_relat\_1 \\ X3) \wedge (v1\_funct\_1 X3)) \Rightarrow ((r3\_pua2mss1 X0 X1 X2 X3) \Leftrightarrow ((k9\_xtuple\_0 \\ X2 = u1\_struct\_0 X0) \wedge ((k9\_xtuple\_0 X3 = u4\_struct\_0 X0) \wedge ((r1\_tarski \\ (k10\_xtuple\_0 X2) (u1\_struct\_0 X1)) \wedge ((r1\_tarski (k10\_xtuple\_0 \\ X3) (u4\_struct\_0 X1)) \wedge ((k3\_relat\_1 (u2\_msualg\_1 X0) X2 = k3\_relat\_1 \\ X3 (u2\_msualg\_1 X1)) \wedge (\forall X4.\forall X5.((v1\_relat\_1 X5) \wedge \\ (v1\_funct\_1 X5)) \Rightarrow (((X4 \in u4\_struct\_0 X0) \wedge (X5 = k1\_funct\_1 (u1\_msualg\_1 \\ X0) X4)) \Rightarrow (k3\_relat\_1 X5 X2 = k1\_funct\_1 (u1\_msualg\_1 X1) (k1\_funct\_1 \\ X3 X4)))))))))))))) \quad (8) \end{aligned}$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_msualg\_1 X0)) \Rightarrow (\forall X1. \\ ((\neg v2\_struct\_0 X1) \wedge (l1\_msualg\_1 X1)) \Rightarrow (\forall X2.((v1\_relat\_1 \\ X2) \wedge (v1\_funct\_1 X2)) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge (v1\_funct\_1 \\ X3)) \Rightarrow ((r3\_pua2mss1 X0 X1 X2 X3) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\ X0)) \Rightarrow (m1\_subset\_1 (k1\_funct\_1 X2 X4) (u1\_struct\_0 X1)))))) \end{aligned}$$