

t5\_group\_12 (TMWYb-  
JUgM5DxrojzMt34uu8wtGrJnK6N8Hn)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_group\_7 : \iota \Rightarrow o$  be given. Let  $v2\_group\_7 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_group\_7 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_group\_7 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_group\_12 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_group\_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_funct\_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_group\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l3\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. ((v1\_relat\_1 X1) \wedge ( \\ & (v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_partfun1 X1 X0) \wedge ((v1\_group\_7 \\ & X1) \wedge ((v2\_group\_7 X1 X0) \wedge (v3\_group\_7 X1 X0)))))) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 X0) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 \\ & (k2\_group\_7 X0 X1))) \Rightarrow (\forall X4. (m1\_subset\_1 X4 (u1\_struct\_0 \\ & (k2\_group\_7 X0 X1))) \Rightarrow (\forall X5. (m1\_subset\_1 X5 (u1\_struct\_0 \\ & (k1\_group\_7 X0 X1 X2))) \Rightarrow (\forall X6. (m1\_subset\_1 X6 (u1\_struct\_0 \\ & (k1\_group\_7 X0 X1 X2))) \Rightarrow (((X3 = k2\_funct\_7 (k1\_group\_1 (k2\_group\_7 \\ & X0 X1)) X2 X5) \wedge (X4 = k2\_funct\_7 (k1\_group\_1 (k2\_group\_7 X0 X1)) X2 \\ & X6)) \Rightarrow (k6\_algstr\_0 (k2\_group\_7 X0 X1) X3 X4 = k2\_funct\_7 (k1\_group\_1 \\ & (k2\_group\_7 X0 X1)) X2 (k6\_algstr\_0 (k1\_group\_7 X0 X1 X2) X5 X6)))))))))) \\ & \tag{1} \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X0) \wedge (((v1\_relat\_1 \\ & X1) \wedge ((v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_partfun1 X1 X0) \wedge \\ & (v1\_group\_7 X1)))))) \wedge (m1\_subset\_1 X2 X0)) \Rightarrow (k1\_group\_7 X0 X1 X2 = \\ & k1\_funct\_1 X1 X2) \\ & \tag{2} \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((l3\_algstr\_0 X0)\wedge((m1\_subset\_1 X1 (u1\_struct\_0 X0))\wedge(m1\_subset\_1 X2 (u1\_struct\_0 X0))))\Rightarrow(m1\_subset\_1 (k6\_algstr\_0 X0 X1 X2) (u1\_struct\_0 X0)) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge((v1\_partfun1 X1 X0)\wedge(v1\_group\_7 X1))))))\wedge(m1\_subset\_1 X2 X0))\Rightarrow((\neg v2\_struct\_0 (k1\_group\_7 X0 X1 X2))\wedge(l3\_algstr\_0 (k1\_group\_7 X0 X1 X2))) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge((v1\_partfun1 X1 X0)\wedge((v1\_group\_7 X1)\wedge((v2\_group\_7 X1 X0)\wedge(v3\_group\_7 X1 X0))))))))\wedge(m1\_subset\_1 X2 X0))\Rightarrow(m1\_subset\_1 (k1\_group\_12 X0 X1 X2) (k1\_zfmisc\_1 (u1\_struct\_0 (k2\_group\_7 X0 X1)))) \quad (5)$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge((v1\_partfun1 X1 X0)\wedge((v1\_group\_7 X1)\wedge((v2\_group\_7 X1 X0)\wedge(v3\_group\_7 X1 X0))))))))\Rightarrow(\forall X2.(m1\_subset\_1 X2 X0)\Rightarrow(\forall X3.(m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 (k2\_group\_7 X0 X1))))\Rightarrow((X3 = k1\_group\_12 X0 X1 X2)\Leftrightarrow(\forall X4.(X4 \in X3)\Leftrightarrow(\exists X5.(m1\_subset\_1 X5 (u1\_struct\_0 (k1\_group\_7 X0 X1 X2))\wedge(X4 = k2\_funct\_7 (k1\_group\_1 (k2\_group\_7 X0 X1) X2 X5)))))))) \quad (6)$$

**Theorem 1**

$$\forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge((v1\_partfun1 X1 X0)\wedge((v1\_group\_7 X1)\wedge((v2\_group\_7 X1 X0)\wedge(v3\_group\_7 X1 X0))))))))\Rightarrow(\forall X2.(m1\_subset\_1 X2 X0)\Rightarrow(\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 (k2\_group\_7 X0 X1)))\Rightarrow(\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 (k2\_group\_7 X0 X1)))\Rightarrow(((X3 \in k1\_group\_12 X0 X1 X2)\wedge(X4 \in k1\_group\_12 X0 X1 X2))\Rightarrow(k6\_algstr\_0 (k2\_group\_7 X0 X1) X3 X4 \in k1\_group\_12 X0 X1 X2))))))$$