

t33\_fsm\_3  
(TMH5qsyQbGaQgupBZ3repJWKfMnN676tMsY)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l2\_fsm\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_catalan2 : \iota \Rightarrow \iota$  be given. Let  $k9\_flang\_1 : \iota \Rightarrow \iota$  be given. Let  $k4\_flang\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_flang\_1 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u2\_fsm\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_fsm\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k8\_afinsq\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_fsm\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $g1\_fsm\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_rewrite3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_fsm\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_fsm\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. (\neg(\neg r1\_xboole\_0 X0 X1) \wedge (\forall X2. \neg(X2 \in X0) \wedge (X2 \in X1))) \wedge (\neg(\exists X2. (X2 \in X0) \wedge (X2 \in X1)) \wedge (r1\_xboole\_0 X0 X1)) \quad (1)$$

Assume the following.

$$\forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k8\_afinsq\_1 X0))) \Rightarrow (\forall X2. ((\neg v2\_struct\_0 X2) \wedge (l2\_fsm\_3 X2 X0 X1)) \Rightarrow (u1\_struct\_0 (k4\_fsm\_3 X0 X1 X2) = k1\_zfmisc\_1 (u1\_struct\_0 X2)))) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 X0))) \Rightarrow (k4\_subset\_1 X0 X1 X2 = k2\_xboole\_0 X1 X2) \quad (3)$$

Assume the following.

$$\forall X0. k3\_catalan2 X0 = k8\_afinsq\_1 X0 \quad (4)$$

Assume the following.

$$\forall X0. m1\_subset\_1 (k9\_flang\_1 X0) (k1\_zfmisc\_1 (k3\_catalan2 X0)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_subset\_1 X1 (k1\_zfmisc\_1 X0))\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 X0)))\Rightarrow(m1\_subset\_1 (k4\_subset\_1 X0 X1 X2) (k1\_zfmisc\_1 X0)) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge((m1\_subset\_1 X1 (k1\_zfmisc\_1 (k8\_afinsq\_1 X0)))\wedge((\neg v2\_struct\_0 X2)\wedge(l2\_fsm\_3 X2 X0 X1))))\Rightarrow((v3\_fsm\_3 (k4\_fsm\_3 X0 X1 X2) X0 (k9\_flang\_1 X0))\wedge(l2\_fsm\_3 (k4\_fsm\_3 X0 X1 X2) X0 (k9\_flang\_1 X0))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1 X1 (k3\_catalan2 X0))\Rightarrow(m1\_subset\_1 (k4\_flang\_1 X0 X1) (k1\_zfmisc\_1 (k3\_catalan2 X0))) \quad (8)$$

Assume the following.

$$\forall X0.m1\_subset\_1 (k2\_flang\_1 X0) (k3\_catalan2 X0) \quad (9)$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k8\_afinsq\_1 X0)))\Rightarrow(\forall X2.((\neg v2\_struct\_0 X2)\wedge(l2\_fsm\_3 X2 X0 X1))\Rightarrow(\forall X3.((v3\_fsm\_3 X3 X0 (k9\_flang\_1 X0))\wedge(l2\_fsm\_3 X3 X0 (k9\_flang\_1 X0)))\Rightarrow((X3 = k4\_fsm\_3 X0 X1 X2)\Leftrightarrow((g1\_fsm\_3 X0 (k9\_flang\_1 X0) (u1\_struct\_0 X3) (u1\_rewrite3 (k9\_flang\_1 X0) X3) (u1\_fsm\_3 X0 (k9\_flang\_1 X0) X3) = k2\_fsm\_3 X0 X1 (g1\_fsm\_3 X0 X1 (u1\_struct\_0 X2) (u1\_rewrite3 X1 X2) (u1\_fsm\_3 X0 X1 X2))))\wedge(u2\_fsm\_3 X0 (k9\_flang\_1 X0) X3 = ReplSep (toset (\lambda X4 : \iota.m1\_subset\_1 X4 (u1\_struct\_0 X3))) (\lambda X4 : \iota.\neg r1\_xboole\_0 X4 (u2\_fsm\_3 X0 X1 X2)) (\lambda X4 : \iota.X4)))))))) \quad (10)$$

### Theorem 1

$$\forall X0.\forall X1.(\neg v1\_xboole\_0 X1)\Rightarrow(\forall X2.((\neg v2\_struct\_0 X2)\wedge(l2\_fsm\_3 X2 X1 (k4\_subset\_1 (k3\_catalan2 X1) (k9\_flang\_1 X1) (k4\_flang\_1 X1 (k2\_flang\_1 X1))))))\Rightarrow(\forall X3.(m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 X2)))\Rightarrow(((X0 \in u2\_fsm\_3 X1 (k4\_subset\_1 (k3\_catalan2 X1) (k9\_flang\_1 X1) (k4\_flang\_1 X1 (k2\_flang\_1 X1))) X2)\wedge(X0 \in X3))\Rightarrow(X3 \in u2\_fsm\_3 X1 (k9\_flang\_1 X1) (k4\_fsm\_3 X1 (k4\_subset\_1 (k3\_catalan2 X1) (k9\_flang\_1 X1) (k4\_flang\_1 X1 (k2\_flang\_1 X1))) X2))))))$$