

# t7\_osalg\_3 (TMHBi- UFQEf187N2rcL6XmVv7CDj1AHpskNX)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v3\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v4\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v5\_orders\_2 : \iota \Rightarrow o$  be given. Let  $l1\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v11\_osalg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_funcop\_1 : \iota \Rightarrow o$  be given. Let  $v1\_osalg\_3 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $r3\_orders\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  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.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge ((v4\_orders\_2 X0) \wedge ((v5\_orders\_2 X0) \wedge (l1\_orders\_2 X0)))))) \Rightarrow (\forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 (u1\_struct\_0 X0)) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_partfun1 X1 (u1\_struct\_0 X0)) \wedge (v1\_funcop\_1 X1)))))) \Rightarrow ((v1\_osalg\_3 X1 X0) \Rightarrow \\ & (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow ((r3\_orders\_2 X0 X2 X3) \Rightarrow ((r1\_tarski (k9\_xtuple\_0 (k1\_funct\_1 X1 X2)) (k9\_xtuple\_0 (k1\_funct\_1 X1 X3))) \wedge (r1\_tarski (k1\_funct\_1 X1 X2) (k1\_funct\_1 X1 X3)))))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (v1\_relat\_1 X2) \Rightarrow (\forall X3. (v1\_relat\_1 X3) \Rightarrow (((r1\_tarski X2 X3) \wedge (r1\_tarski X0 X1)) \Rightarrow (r1\_tarski (k7\_relat\_1 X2 X0) (k7\_relat\_1 X3 X1)))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X0)\wedge((v1\_funct\_1 X0)\wedge(v1\_funcop\_1 X0)))\Rightarrow((v1\_relat\_1 (k1\_funct\_1 X0 X1))\wedge(v1\_funct\_1 (k1\_funct\_1 X0 X1))) \quad (4)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge(l1\_struct\_0 X0))\Rightarrow(\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (5)$$

Assume the following.

$$\forall X0.(l1\_orders\_2 X0)\Rightarrow(l1\_struct\_0 X0) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge((v1\_relat\_1 X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge((v1\_partfun1 X2 X0)\wedge(v1\_funcop\_1 X2))))))\Rightarrow((v1\_relat\_1 (k9\_pboole X0 X1 X2))\wedge((v4\_relat\_1 (k9\_pboole X0 X1 X2) X0)\wedge((v1\_funct\_1 (k9\_pboole X0 X1 X2))\wedge(v1\_partfun1 (k9\_pboole X0 X1 X2) X0)))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1\_relat\_1 X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge((v1\_partfun1 X2 X0)\wedge(v1\_funcop\_1 X2))))))\Rightarrow(\forall X3.((v1\_relat\_1 X3)\wedge((v4\_relat\_1 X3 X0)\wedge((v1\_funct\_1 X3)\wedge(v1\_partfun1 X3 X0))))\Rightarrow((X3 = k9\_pboole X0 X1 X2)\Leftrightarrow(\forall X4.(X4 \in X0)\Rightarrow(k1\_funct\_1 X3 X4 = k7\_relat\_1 (k1\_funct\_1 X2 X4) (k1\_funct\_1 X1 X4)))))) \quad (8)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge((v3\_orders\_2 X0)\wedge((v4\_orders\_2 X0)\wedge((v5\_orders\_2 X0)\wedge(l1\_orders\_2 X0))))))\Rightarrow(\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 (u1\_struct\_0 X0))\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 (u1\_struct\_0 X0))))))\Rightarrow((v11\_osalg\_1 X1 X0)\Leftrightarrow(\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0))\Rightarrow(\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0))\Rightarrow((r3\_orders\_2 X0 X2 X3)\Rightarrow(r1\_tarski (k1\_funct\_1 X1 X2) (k1\_funct\_1 X1 X3))))))) \quad (9)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge ((v4\_orders\_2 \\ & X0) \wedge ((v5\_orders\_2 X0) \wedge (l1\_orders\_2 X0)))))) \Rightarrow (\forall X1.((v1\_relat\_1 \\ & X1) \wedge ((v4\_relat\_1 X1 (u1\_struct\_0 X0)) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_partfun1 \\ & X1 (u1\_struct\_0 X0)) \wedge (v11\_osalg\_1 X1 X0)))))) \Rightarrow (\forall X2.((v1\_relat\_1 \\ & X2) \wedge ((v4\_relat\_1 X2 (u1\_struct\_0 X0)) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_partfun1 \\ & X2 (u1\_struct\_0 X0)) \wedge (v1\_funcop\_1 X2)))))) \Rightarrow ((v1\_osalg\_3 X2 X0) \Rightarrow \\ & ((v1\_relat\_1 (k9\_pboole (u1\_struct\_0 X0) X1 X2)) \wedge ((v4\_relat\_1 \\ & (k9\_pboole (u1\_struct\_0 X0) X1 X2) (u1\_struct\_0 X0)) \wedge ((v1\_funct\_1 \\ & (k9\_pboole (u1\_struct\_0 X0) X1 X2)) \wedge ((v1\_partfun1 (k9\_pboole \\ & (u1\_struct\_0 X0) X1 X2) (u1\_struct\_0 X0)) \wedge (v11\_osalg\_1 (k9\_pboole \\ & (u1\_struct\_0 X0) X1 X2) X0)))))))))) \end{aligned}$$