t42_xboole_1 (TMRogbJjsUdaYctHrosmxVsJXiDqhbFeCoT)

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Let $k4\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1\_xboole\_0 : \iota$ be given. Let $k3\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.\forall X1.r1\_tarski\ X0\ (k2\_xboole\_0\ X0\ X1) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.k2\_xboole\_0\ X0\ (k2\_xboole\_0\ X0\ X1) = k2\_xboole\_0\ X0\ X1 \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.k2\_xboole\_0\ (k2\_xboole\_0\ X0\ X1)\ X2 = k2\_xboole\_0\ X0\ (k2\_xboole\_0\ X1\ X2) \tag{3}$$

Assume the following.

$$\forall X0.k4\_xboole\_0\ k1\_xboole\_0\ X0 = k1\_xboole\_0 \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.k4\_xboole\_0\ (k4\_xboole\_0\ X0\ X1)\ X2 = k4\_xboole\_0\ X0\ (k2\_xboole\_0\ X1\ X2) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.k4\_xboole\_0\ (k2\_xboole\_0\ X0\ X1)\ X1 = k4\_xboole\_0\ X0\ X1 \tag{6}$$

Assume the following.

$$\forall X0.k4\_xboole\_0\ X0\ k1\_xboole\_0 = X0 \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.k2\_xboole\_0\ X0\ (k4\_xboole\_0\ X1\ X0) = k2\_xboole\_0\ X0\ X1 \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.(r1\_tarski\ X0\ (k4\_xboole\_0\ X1\ X0))\Rightarrow(X0 = k1\_xboole\_0) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.r1\_tarski\ (k4\_xboole\_0\ X0\ X1)\ X0 \tag{10}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.r1\_tarski\ (k2\_xboole\_0\ (k3\_xboole\_0\ X0\ X1)\ (k3\_xboole\_0\ X0\ X2))\ (k2\_xboole\_0\ X1\ X2) \tag{11}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.r1\_tarski\ (k3\_xboole\_0\ X0\ X1)\ (k2\_xboole\_0\ X0\ X2) \tag{12}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.k2\_xboole\_0\ (k2\_xboole\_0\ (k3\_xboole\_0\ X0\ X1)\ (k3\_xboole\_0\ X1\ X2))\ (k3\_xboole\_0\ X2\ X0) = k3\_xboole\_0\ (k3\_xboole\_0\ (k2\_xboole\_0\ X0\ X1)\ (k2\_xboole\_0\ X1\ X2))\ (k2\_xboole\_0\ X2\ X0) \tag{13}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.k2\_xboole\_0\ X0\ (k3\_xboole\_0\ X1\ X2) = k3\_xboole\_0\ (k2\_xboole\_0\ X0\ X1)\ (k2\_xboole\_0\ X0\ X2) \tag{14}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.k3\_xboole\_0\ X0\ (k2\_xboole\_0\ X1\ X2) = k2\_xboole\_0\ (k3\_xboole\_0\ X0\ X1)\ (k3\_xboole\_0\ X0\ X2) \tag{15}$$

Assume the following.

$$\forall X0.\forall X1.k2\_xboole\_0\ X0\ (k3\_xboole\_0\ X0\ X1) = X0 \tag{16}$$

Assume the following.

$$\forall X0.\forall X1.(r1\_tarski\ X0\ X1)\Rightarrow(k2\_xboole\_0\ X0\ X1 = X1) \tag{17}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(r1\_tarski\ X0\ X1)\Rightarrow(r1\_tarski\ X0\ (k2\_xboole\_0\ X2\ X1)) \tag{18}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.k4\_xboole\_0\ X0\ (k3\_xboole\_0\ X1\ X2) = k2\_xboole\_0\ (k4\_xboole\_0\ X0\ X1)\ (k4\_xboole\_0\ X0\ X2) \tag{19}$$

Assume the following.

$$\forall X0.\forall X1.(k4\_xboole\_0\ X0\ X1 = k1\_xboole\_0) \Leftrightarrow (r1\_tarski\ X0\ X1) \tag{20}$$

Assume the following.

$$\forall X0.\forall X1.k2\_xboole\_0\ X0\ X0 = X0 \tag{21}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(X2 = k4\_xboole\_0\ X0\ X1) \Leftrightarrow (\forall X3.\ (X3 \in X2) \Leftrightarrow ((X3 \in X0) \wedge (\neg X3 \in X1))) \tag{22}$$

Assume the following.

$$\forall X0.\forall X1.(X0 = X1) \Leftrightarrow ((r1\_tarski\ X0\ X1) \wedge (r1\_tarski\ X1\ X0)) \tag{23}$$

Assume the following.

$$\forall X0.\forall X1.k2\_xboole\_0\ X0\ X1 = k2\_xboole\_0\ X1\ X0 \tag{24}$$

Theorem 1

$$\forall X0.\forall X1.\forall X2.k4\_xboole\_0\ (k2\_xboole\_0\ X0\ X1)\ X2 = k2\_xboole\_0\ (k4\_xboole\_0\ X0\ X2)\ (k4\_xboole\_0\ X1\ X2)$$