

l49\_arytm\_2  
(TMTV6FYL327v6jEdirfP5wMDS85KCtXMkga)

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Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_arytm\_2 : \iota$  be given. Let  $r1\_arytm\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_arytm\_3 : \iota$  be given. Let  $r3\_arytm\_3 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k6\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_arytm\_3 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k1\_arytm\_2 : \iota$  be given. Let  $k11\_arytm\_3 : \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 k5\_arytm\_3) \Rightarrow (\forall X1.(m1\_subset\_1 \\ & X1 k5\_arytm\_3) \Rightarrow (\forall X2.(m1\_subset\_1 X2 k5\_arytm\_3) \Rightarrow (((r3\_arytm\_3 \\ & X0 X1) \wedge (r3\_arytm\_3 X1 X2)) \Rightarrow (r3\_arytm\_3 X0 X2)))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (2)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((r1\_tarski X0 X1) \wedge (r1\_tarski X1 X2)) \Rightarrow (r1\_tarski X0 X2) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \quad (4)$$

Assume the following.

$$\begin{aligned} & r1\_tarski k2\_arytm\_2 (k2\_xboole\_0 k5\_arytm\_3 (ReplSep (toset \\ & (\lambda X0 : \iota.m1\_subset\_1 X0 (k1\_zfmisc\_1 k5\_arytm\_3))) (\lambda X0 : \\ & \iota.\forall X1.(m1\_subset\_1 X1 k5\_arytm\_3) \Rightarrow ((X1 \in X0) \Rightarrow ((\forall X2. \\ & (m1\_subset\_1 X2 k5\_arytm\_3) \Rightarrow ((r3\_arytm\_3 X2 X1) \Rightarrow (X2 \in X0)))) \wedge \\ & (\exists X2.(m1\_subset\_1 X2 k5\_arytm\_3) \wedge ((X2 \in X0) \wedge (\neg r3\_arytm\_3 \\ & X2 X1)))))) (\lambda X0 : \iota.X0)) \end{aligned} \quad (5)$$

Assume the following.

$$\neg v1\_xboole\_0 \ k2\_arytm\_2 \quad (6)$$

Assume the following.

$$\begin{aligned} k5\_arytm\_3 = & k2\_xboole\_0 \ (k6\_subset\_1 \ (ReplSep2 \ (toset \ (\lambda X0 : \\ & \iota.m1\_subset\_1 \ X0 \ k4\_ordinal1)) \ (\lambda X0 : \iota.toset \ (\lambda X1 : \\ & \iota.m1\_subset\_1 \ X1 \ k4\_ordinal1)) \ (\lambda X0 : \iota.\lambda X1 : \iota.(r1\_arytm\_3 \\ & X0 \ X1) \wedge (X1 \neq k1\_xboole\_0)) \ (\lambda X0 : \iota.\lambda X1 : \iota.k4\_tarski \\ & X0 \ X1)) \ (ReplSep \ (toset \ (\lambda X0 : \iota.m1\_subset\_1 \ X0 \ k4\_ordinal1)) \\ & (\lambda X0 : \iota.True \ (\lambda X0 : \iota.k4\_tarski \ X0 \ np\_1))) \ k4\_ordinal1 \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_subset\_1 \ X0 \ k2\_arytm\_2) \Rightarrow & (\forall X1.(m1\_subset\_1 \\ X1 \ k2\_arytm\_2) \Rightarrow & (((X0 \in k5\_arytm\_3) \wedge (X1 \in k5\_arytm\_3)) \Rightarrow ((r1\_arytm\_2 \\ X0 \ X1) \Leftrightarrow & (\exists X2.(m1\_subset\_1 \ X2 \ k5\_arytm\_3) \wedge (\exists X3.( \\ m1\_subset\_1 \ X3 \ k5\_arytm\_3) \wedge & ((X0 = X2) \wedge (X1 = X3) \wedge (r3\_arytm\_3 \ X2 \\ X3)))))) \wedge & (((X0 \in k5\_arytm\_3) \Rightarrow ((X1 \in k5\_arytm\_3) \vee ((r1\_arytm\_2 \\ X0 \ X1) \Leftrightarrow (X0 \in X1)))) \wedge & (((X1 \in k5\_arytm\_3) \Rightarrow ((X0 \in k5\_arytm\_3) \vee ((r1\_arytm\_2 \\ X0 \ X1) \Leftrightarrow (\neg X1 \in X0)))) \wedge & (\neg(\neg(X0 \in k5\_arytm\_3) \wedge (X1 \in k5\_arytm\_3)) \wedge \\ ((\neg(X0 \in k5\_arytm\_3) \wedge (\neg X1 \in k5\_arytm\_3)) \wedge & ((\neg(\neg X0 \in k5\_arytm\_3) \wedge \\ (X1 \in k5\_arytm\_3)) \wedge (\neg(r1\_arytm\_2 \ X0 \ X1) \Leftrightarrow & (r1\_tarski \ X0 \ X1)))))))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(X2 = k2\_xboole\_0 \ X0 \ X1) \Leftrightarrow & (\forall X3. \\ (X3 \in X2) \Leftrightarrow & ((X3 \in X0) \vee (X3 \in X1))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(r1\_tarski \ X0 \ X1) \Leftrightarrow & (\forall X2.(X2 \in X0) \Rightarrow \\ (X2 \in X1)) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} k2\_arytm\_2 = & k6\_subset\_1 \ (k2\_xboole\_0 \ k5\_arytm\_3 \ k1\_arytm\_2) \\ & (ReplSep \ (toset \ (\lambda X0 : \iota.m1\_subset\_1 \ X0 \ k5\_arytm\_3)) \ (\lambda X0 : \\ & \iota.X0 \neq k11\_arytm\_3) \ (\lambda X0 : \iota.ReplSep \ (toset \ (\lambda X1 : \iota. \\ & m1\_subset\_1 \ X1 \ k5\_arytm\_3)) \ (\lambda X1 : \iota.\neg r3\_arytm\_3 \ X0 \ X1) \ (\lambda X1 : \\ & \iota.X1))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((m1\_subset\_1 \ X0 \ k2\_arytm\_2) \wedge & (m1\_subset\_1 \\ X1 \ k2\_arytm\_2)) \Rightarrow & ((r1\_arytm\_2 \ X0 \ X1) \vee (r1\_arytm\_2 \ X1 \ X0)) \end{aligned} \quad (12)$$

### Theorem 1

$$\begin{aligned} \forall X0.(m1\_subset\_1 \ X0 \ k2\_arytm\_2) \Rightarrow & (\forall X1.(m1\_subset\_1 \\ X1 \ k2\_arytm\_2) \Rightarrow & (\forall X2.(m1\_subset\_1 \ X2 \ k2\_arytm\_2) \Rightarrow (((r1\_arytm\_2 \\ X0 \ X1) \wedge (r1\_arytm\_2 \ X1 \ X2)) \Rightarrow & (r1\_arytm\_2 \ X0 \ X2)))) \end{aligned}$$