

## l20\_arytm\_1

(TMdH9D5pXwVb5oWNcejHcGvYzmg2YSLj4zN)

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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  $k1\_arytm\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_arytm\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k11\_arytm\_3 : \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 k2\_arytm\_2) \Rightarrow (\forall X1.(m1\_subset\_1 \\ & X1 k2\_arytm\_2) \Rightarrow (\forall X2.(m1\_subset\_1 X2 k2\_arytm\_2) \Rightarrow ((r1\_arytm\_2 \\ & X0 X1) \Leftrightarrow (r1\_arytm\_2 (k7\_arytm\_2 X0 X2) (k7\_arytm\_2 X1 X2)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 k2\_arytm\_2) \Rightarrow (\forall X1.(m1\_subset\_1 \\ & X1 k2\_arytm\_2) \Rightarrow ((X0 = k11\_arytm\_3) \Rightarrow (r1\_arytm\_2 X0 X1))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 k2\_arytm\_2) \Rightarrow (\forall X1.(m1\_subset\_1 \\ & X1 k2\_arytm\_2) \Rightarrow (\forall X2.(m1\_subset\_1 X2 k2\_arytm\_2) \Rightarrow (((r1\_arytm\_2 \\ & X0 X1) \wedge (r1\_arytm\_2 X1 X2)) \Rightarrow (r1\_arytm\_2 X0 X2)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 k2\_arytm\_2) \Rightarrow (\forall X1.(m1\_subset\_1 \\ & X1 k2\_arytm\_2) \Rightarrow (\forall X2.(m1\_subset\_1 X2 k2\_arytm\_2) \Rightarrow ((X0 = \\ & k7\_arytm\_2 X1 X2) \Rightarrow (r1\_arytm\_2 X2 X0)))))) \end{aligned} \quad (4)$$

Assume the following.

$$k11\_arytm\_3 = k1\_xboole\_0 \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((m1\_subset\_1 X0 k2\_arytm\_2) \wedge (m1\_subset\_1 \\ & X1 k2\_arytm\_2)) \Rightarrow (m1\_subset\_1 (k7\_arytm\_2 X0 X1) k2\_arytm\_2) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 k2\_arytm\_2)\wedge(m1\_subset\_1 X1 k2\_arytm\_2))\Rightarrow(m1\_subset\_1 (k1\_arytm\_1 X0 X1) k2\_arytm\_2) \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_subset\_1 X0 k2\_arytm\_2)\Rightarrow(\forall X1.(m1\_subset\_1 X1 k2\_arytm\_2)\Rightarrow(\forall X2.(m1\_subset\_1 X2 k2\_arytm\_2)\Rightarrow(((r1\_arytm\_2 X1 X0)\Rightarrow((X2 = k1\_arytm\_1 X0 X1)\Leftrightarrow(k7\_arytm\_2 X2 X1 = X0))))\wedge((\neg r1\_arytm\_2 X1 X0)\Rightarrow((X2 = k1\_arytm\_1 X0 X1)\Leftrightarrow(X2 = k11\_arytm\_3)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 k2\_arytm\_2)\wedge(m1\_subset\_1 X1 k2\_arytm\_2))\Rightarrow((r1\_arytm\_2 X0 X1)\vee(r1\_arytm\_2 X1 X0)) \quad (9)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(m1\_subset\_1 X0 k2\_arytm\_2)\Rightarrow(\forall X1.(m1\_subset\_1 X1 k2\_arytm\_2)\Rightarrow(\forall X2.(m1\_subset\_1 X2 k2\_arytm\_2)\Rightarrow((r1\_arytm\_2 (k1\_arytm\_1 X0 X1) X2)\Leftrightarrow(r1\_arytm\_2 X0 (k7\_arytm\_2 X2 X1)))))) \end{aligned}$$