

t40\_chain\_1  
(TMc66GZctPnAxyxNuegMZBaJ4sokyo3N59B)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $m2\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_euclid : \iota \Rightarrow \iota$  be given. Let  $m1\_chain\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_chain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_chain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $m2\_chain\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_seq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_chain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $m1\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $v6\_membered : \iota \Rightarrow o$  be given. Let  $v3\_membered : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v3\_valued\_0 : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v1\_xboole\_0 X0) \wedge (m2\_subset\_1 X0 k1\_numbers k5\_numbers)) \Rightarrow \\
& \quad (\forall X1. (m1\_chain\_1 X1 X0) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& \quad (k1\_euclid X0))) \Rightarrow ((X2 \in k4\_chain\_1 X0 X1 X0) \Leftrightarrow (\exists X3. (m2\_finseq\_2 \\
& \quad X3 k1\_numbers (k1\_euclid X0)) \wedge (\exists X4. (m2\_finseq\_2 X4 k1\_numbers \\
& \quad (k1\_euclid X0)) \wedge ((X2 = k3\_chain\_1 X0 X3 X4) \wedge (\forall X5. (m2\_subset\_1 \\
& \quad X5 k5\_numbers (k2\_finseq\_1 X0)) \Rightarrow (m2\_chain\_1 (k1\_domain\_1 k1\_numbers \\
& \quad k1\_numbers (k1\_seq\_1 X3 X5) (k1\_seq\_1 X4 X5)) (k2\_chain\_1 X0 X1 X5)))) \wedge \\
& \quad ((\forall X5. (m2\_subset\_1 X5 k5\_numbers (k2\_finseq\_1 X0)) \Rightarrow (\neg \\
& \quad r1\_xxreal\_0 (k1\_seq\_1 X4 X5) (k1\_seq\_1 X3 X5))) \vee (\forall X5. (m2\_subset\_1 \\
& \quad X5 k5\_numbers (k2\_finseq\_1 X0)) \Rightarrow (\neg r1\_xxreal\_0 (k1\_seq\_1 X3 X5) \\
& \quad (k1\_seq\_1 X4 X5))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge (m2\_subset\_1 X0 k1\_numbers k5\_numbers)) \Rightarrow \\
& \quad (\forall X1.(m2\_finseq\_2 X1 k1\_numbers (k1\_euclid X0)) \Rightarrow (\forall X2. \\
& \quad (m2\_finseq\_2 X2 k1\_numbers (k1\_euclid X0)) \Rightarrow (\forall X3.(m2\_finseq\_2 \\
& \quad X3 k1\_numbers (k1\_euclid X0)) \Rightarrow (\forall X4.(m2\_finseq\_2 X4 k1\_numbers \\
& \quad (k1\_euclid X0)) \Rightarrow ((\forall X5.(m2\_subset\_1 X5 k5\_numbers (k2\_finseq\_1 \\
& \quad X0)) \Rightarrow (r1\_xxreal\_0 (k1\_seq\_1 X1 X5) (k1\_seq\_1 X2 X5)))) \vee (\forall X5. \\
& \quad (m2\_subset\_1 X5 k5\_numbers (k2\_finseq\_1 X0)) \Rightarrow (\neg r1\_xxreal\_0 ( \\
& \quad k1\_seq\_1 X1 X5) (k1\_seq\_1 X2 X5)))) \Rightarrow ((k3\_chain\_1 X0 X1 X2 = k3\_chain\_1 \\
& \quad X0 X3 X4) \Leftrightarrow ((X1 = X3) \wedge (X2 = X4))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\
& \quad (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\
& \quad X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (m1\_finseq\_2 X1 X0) \Rightarrow (\forall X2.(m2\_finseq\_2 \\
& \quad X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1))
\end{aligned} \tag{4}$$

Assume the following.

$$\forall X0. \forall X1. (m2\_finseq\_1 X1 X0) \Leftrightarrow (m1\_finseq\_1 X1 X0) \tag{5}$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \tag{6}$$

Assume the following.

$$\neg v1\_finset\_1 k4\_ordinal1 \tag{7}$$

Assume the following.

$$v6\_membered k4\_ordinal1 \tag{8}$$

Assume the following.

$$v3\_membered k1\_numbers \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (m1\_finseq\_2 X1 X0) \Rightarrow (\forall X2.(m2\_finseq\_2 \\
& \quad X2 X0 X1) \Rightarrow (m2\_finseq\_1 X2 X0))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (m2\_finseq\_1 X1 X0) \Rightarrow ((v1\_funct\_1 X1) \wedge ( \\
& \quad (v1\_finseq\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers \\
& \quad X0))))))
\end{aligned} \tag{11}$$

Assume the following.

$$\forall X0.\forall X1.(m1\_finseq\_1 X1 X0)\Rightarrow((v1\_relat\_1 X1)\wedge(v1\_funct\_1 X1)\wedge(v1\_finseq\_1 X1)) \quad (12)$$

Assume the following.

$$m1\_subset\_1 k5\_numbers (k1\_zfmisc\_1 k1\_numbers) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X0 k5\_numbers))\wedge((m1\_subset\_1 X1 (k1\_euclid X0))\wedge(m1\_subset\_1 X2 (k1\_euclid X0))))\Rightarrow((\neg v1\_xboole\_0 (k3\_chain\_1 X0 X1 X2))\wedge(m1\_subset\_1 (k3\_chain\_1 X0 X1 X2) (k1\_zfmisc\_1 (k1\_euclid X0)))) \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X0)\wedge((v1\_funct\_1 X0)\wedge(v3\_valued\_0 X0)))\Rightarrow(m1\_subset\_1 (k1\_seq\_1 X0 X1) k1\_numbers) \quad (15)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0)\Rightarrow(m1\_finseq\_2 (k1\_euclid X0) k1\_numbers) \quad (16)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v1\_xboole\_0 X0)\wedge(m2\_subset\_1 X0 k1\_numbers k5\_numbers))\Rightarrow \\ (\forall X1.(m2\_finseq\_2 X1 k1\_numbers (k1\_euclid X0))\Rightarrow(\forall X2. \\ (m2\_finseq\_2 X2 k1\_numbers (k1\_euclid X0))\Rightarrow(k3\_chain\_1 X0 X1 X2 = \\ ReplSep (toset (\lambda X3 : \iota.m2\_finseq\_2 X3 k1\_numbers (k1\_euclid \\ X0))) (\lambda X3 : \iota.\neg(\forall X4.(m2\_subset\_1 X4 k5\_numbers ( \\ k2\_finseq\_1 X0))\Rightarrow((r1\_xxreal\_0 (k1\_seq\_1 X1 X4) (k1\_seq\_1 X3 X4))\wedge \\ (r1\_xxreal\_0 (k1\_seq\_1 X3 X4) (k1\_seq\_1 X2 X4))))\wedge(\forall X4. \\ (m2\_subset\_1 X4 k5\_numbers (k2\_finseq\_1 X0))\Rightarrow(\neg(\neg r1\_xxreal\_0 \\ (k1\_seq\_1 X1 X4) (k1\_seq\_1 X2 X4))\wedge((r1\_xxreal\_0 (k1\_seq\_1 X3 X4) \\ (k1\_seq\_1 X2 X4))\vee(r1\_xxreal\_0 (k1\_seq\_1 X1 X4) (k1\_seq\_1 X3 X4)))))) \\ (\lambda X3 : \iota.X3)))) \end{aligned} \quad (17)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_xxreal\_0 X0)\wedge(v1\_xxreal\_0 X1))\Rightarrow((r1\_xxreal\_0 X0 X1)\vee(r1\_xxreal\_0 X1 X0)) \quad (18)$$

Assume the following.

$$\forall X0.(v1\_xreal\_0 X0)\Rightarrow(v1\_xxreal\_0 X0) \quad (19)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k1\_numbers)\Rightarrow(v1\_xreal\_0 X0) \quad (20)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \Rightarrow (v1\_xboole\_0 X1)) \quad (21)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (v1\_finset\_1 X0) \quad (22)$$

Assume the following.

$$\forall X0.\forall X1.(v3\_membered X1) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))) \Rightarrow (v3\_valued\_0 X2)) \quad (23)$$

Assume the following.

$$\forall X0.(v6\_membered X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 X0) \Rightarrow (v7\_ordinal1 X1)) \quad (24)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0 X0) \wedge (m2\_subset\_1 X0 k1\_numbers k5\_numbers)) \Rightarrow \\ & \quad (\forall X1.(m2\_finseq\_2 X1 k1\_numbers (k1\_euclid X0)) \Rightarrow (\forall X2. \\ & \quad (m2\_finseq\_2 X2 k1\_numbers (k1\_euclid X0)) \Rightarrow (\forall X3.(m1\_chain\_1 \\ & \quad X3 X0) \Rightarrow ((k3\_chain\_1 X0 X1 X2 \in k4\_chain\_1 X0 X3 X0) \Leftrightarrow ((\forall X4. \\ & (m2\_subset\_1 X4 k5\_numbers (k2\_finseq\_1 X0)) \Rightarrow (m2\_chain\_1 (k1\_domain\_1 \\ & k1\_numbers k1\_numbers (k1\_seq\_1 X1 X4) (k1\_seq\_1 X2 X4) (k2\_chain\_1 \\ & X0 X3 X4)))) \wedge ((\forall X4.(m2\_subset\_1 X4 k5\_numbers (k2\_finseq\_1 \\ & X0)) \Rightarrow (\neg r1\_xreal\_0 (k1\_seq\_1 X2 X4) (k1\_seq\_1 X1 X4))) \vee (\forall X4. \\ & (m2\_subset\_1 X4 k5\_numbers (k2\_finseq\_1 X0)) \Rightarrow (\neg r1\_xreal\_0 ( \\ & k1\_seq\_1 X1 X4) (k1\_seq\_1 X2 X4)))))))))) \end{aligned}$$