

# t40\_entropy1 (TMPtBocU- fUDn8vybvZMEivQdJ8XXLnRaRWM)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_matrix\_1 : \iota \Rightarrow o$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_finseq\_2 : \iota \Rightarrow \iota$  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  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_matrix\_1 : \iota \Rightarrow \iota$  be given. Let  $k7\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k1\_matrix\_1 : \iota \Rightarrow \iota$  be given. Let  $k4\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_entropy1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_matrix\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k3\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_matrprob : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $k2\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_numbers : \iota$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k1\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $v3\_card\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. \neg (X0 \in X1) \wedge (v1\_xboole\_0 X1) \quad (1)$$

Assume the following.

$$\forall X0. (v1\_xboole\_0 X0) \Rightarrow (X0 = k1\_xboole\_0) \quad (2)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_matrix\_1 X1) \wedge \\
& (m2\_finseq\_1 X1 (k3\_finseq\_2 X0))) \Rightarrow (\forall X2.(m2\_finseq\_1 \\
& X2 (k3\_finseq\_2 X0) \Rightarrow (((k3\_finseq\_1 X2 = k3\_finseq\_1 X1) \wedge ((k1\_matrprob \\
& X0 X2 np\_1 = k1\_matrprob X0 X1 np\_1) \wedge (\forall X3.(m2\_subset\_1 \\
& X3 k1\_numbers k5\_numbers) \Rightarrow ((r1\_xxreal\_0 np\_1 X3) \Rightarrow ((r1\_xxreal\_0 \\
& (k3\_finseq\_1 X1) X3) \vee (k1\_matrprob X0 X2 (k2\_nat\_1 X3 np\_1) = k8\_finseq\_1 \\
& X0 (k1\_matrprob X0 X2 X3) (k1\_matrprob X0 X1 (k2\_nat\_1 X3 np\_1)))))) \Rightarrow \\
& (\forall X3.(m2\_subset\_1 X3 k1\_numbers k5\_numbers) \Rightarrow (\forall X4. \\
& (m2\_subset\_1 X4 k1\_numbers k5\_numbers) \Rightarrow ((k4\_tarski X3 X4 \in k2\_matrix\_1 \\
& X1) \Rightarrow ((k7\_real\_1 (k8\_real\_1 (k9\_real\_1 X3 np\_1) (k1\_matrix\_1 \\
& X1)) X4 \in k4\_finseq\_1 (k1\_matrprob X0 X2 (k3\_finseq\_1 X1))) \wedge (k3\_matrix\_1 \\
& X0 X1 X3 X4 = k1\_funct\_1 (k1\_matrprob X0 X2 (k3\_finseq\_1 X1)) (k7\_real\_1 \\
& (k8\_real\_1 (k9\_real\_1 X3 np\_1) (k1\_matrix\_1 X1)) X4))))))))) \Rightarrow
\end{aligned} \tag{3}$$

Assume the following.

$$m1\_subset\_1 k1\_xboole\_0 k4\_ordinal1 \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m2\_subset\_1 X0 k1\_numbers k5\_numbers) \Rightarrow (\forall X1. \\
& (m2\_subset\_1 X1 k1\_numbers k5\_numbers) \Rightarrow (\forall X2.((v1\_relat\_1 \\
& X2) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_finseq\_1 X2) \wedge (v1\_matrix\_1 X2))) \Rightarrow \\
& ((k4\_tarski X0 X1 \in k2\_matrix\_1 X2) \Leftrightarrow ((X0 \in k2\_finseq\_1 (k3\_finseq\_1 \\
& X2)) \wedge (X1 \in k2\_finseq\_1 (k1\_matrix\_1 X2)))))) \Rightarrow
\end{aligned} \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.(m2\_finseq\_1 X1 X0) \Leftrightarrow (m1\_finseq\_1 X1 X0) \tag{6}$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \tag{7}$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \tag{8}$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (k2\_finseq\_1 X0 = k1\_finseq\_1 X0) \tag{9}$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (v3\_card\_1 (k1\_finseq\_1 X0) X0) \tag{10}$$

Assume the following.

$$v1\_xboole\_0 k1\_xboole\_0 \tag{11}$$

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.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge((v1\_matrix\_1 X1)\wedge(m1\_finseq\_1 X1 (k3\_finseq\_2 X0))))\Rightarrow(m2\_finseq\_1 (k2\_entropy1 X0 X1) X0) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.k4\_tarski X0 X1 = k2\_tarski (k2\_tarski X0 X1) (k1\_tarski X0) \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(\forall X1.((v1\_matrix\_1 X1)\wedge(m2\_finseq\_1 X1 (k3\_finseq\_2 X0))))\Rightarrow(\forall X2.(m2\_finseq\_1 X2 X0)\Rightarrow(((k3\_finseq\_1 X1 = k6\_numbers)\Rightarrow((X2 = k2\_entropy1 X0 X1)\Leftrightarrow(X2 = k1\_xboole\_0)))\wedge((k3\_finseq\_1 X1\neq k6\_numbers)\Rightarrow((X2 = k2\_entropy1 X0 X1)\Leftrightarrow(\exists X3.(m2\_finseq\_1 X3 (k3\_finseq\_2 X0))\wedge((X2 = k1\_matrprob X0 X3 (k3\_finseq\_1 X1))\wedge((k3\_finseq\_1 X3 = k3\_finseq\_1 X1)\wedge((k1\_matrprob X0 X3 np\_1 = k1\_matrprob X0 X1 np\_1)\wedge(\forall X4.(m2\_subset\_1 X4 k1\_numbers k5\_numbers)\Rightarrow((r1\_xxreal\_0 np\_1 X4)\Rightarrow((r1\_xxreal\_0 (k3\_finseq\_1 X1) X4)\vee(k1\_matrprob X0 X3 (k2\_nat\_1 X4 np\_1) = k8\_finseq\_1 X0 (k1\_matrprob X0 X3 X4) (k1\_matrprob X0 X1 (k2\_nat\_1 X4 np\_1)))))))))))))) \quad (15) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.k2\_tarski X0 X1 = k2\_tarski X1 X0 \quad (16)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1)\Rightarrow(v7\_ordinal1 X0) \quad (17)$$

Assume the following.

$$\forall X0.(v3\_card\_1 X0 k1\_xboole\_0)\Rightarrow(v1\_xboole\_0 X0) \quad (18)$$

### Theorem 1

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(\forall X1.((v1\_matrix\_1 X1)\wedge(m2\_finseq\_1 X1 (k3\_finseq\_2 X0))))\Rightarrow(\forall X2.(m2\_subset\_1 X2 k1\_numbers k5\_numbers)\Rightarrow(\forall X3.(m2\_subset\_1 X3 k1\_numbers k5\_numbers)\Rightarrow((k4\_tarski X2 X3 \in k2\_matrix\_1 X1)\Rightarrow((k7\_real\_1 (k8\_real\_1 (k9\_real\_1 X2 np\_1) (k1\_matrix\_1 X1)) X3 \in k4\_finseq\_1 (k2\_entropy1 X0 X1))\wedge(k3\_matrix\_1 X0 X1 X2 X3 = k1\_funct\_1 (k2\_entropy1 X0 X1) (k7\_real\_1 (k8\_real\_1 (k9\_real\_1 X2 np\_1) (k1\_matrix\_1 X1)) X3)))))) \quad (19) \end{aligned}$$