

## t16\_binari\_3

(TMJKiSVg6rnArxVRNH9D2hV9piRi6hgRH1T)

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Let  $k7\_binarith : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k10\_binarith : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_margrel1 : \iota$  be given. Let  $k7\_margrel1 : \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v3\_card\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_binarith : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_binarith : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v1\_xcmplx\_0 : \iota \Rightarrow o$  be given. Let  $k2\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $k12\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_binarith : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_margrel1 : \iota$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_xboolean : \iota$  be given. Let  $k1\_xboolean : \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $k5\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $v1\_xboolean : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (X0 = k1\_xboole\_0) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0 X0) \wedge (v7\_ordinal1 X0)) \Rightarrow (\forall X1. \\ & ((v3\_card\_1 X1 X0) \wedge (m2\_finseq\_1 X1 k6\_margrel1)) \Rightarrow (\forall X2. \\ & ((v3\_card\_1 X2 X0) \wedge (m2\_finseq\_1 X2 k6\_margrel1)) \Rightarrow ((k6\_binarith \\ & X0 X1 = k6\_binarith X0 X2) \Rightarrow (X1 = X2)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0 X0) \wedge (v7\_ordinal1 X0)) \Rightarrow (\forall X1. \\ & ((v3\_card\_1 X1 X0) \wedge (m2\_finseq\_1 X1 k6\_margrel1)) \Rightarrow (\forall X2. \\ & ((v3\_card\_1 X2 X0) \wedge (m2\_finseq\_1 X2 k6\_margrel1)) \Rightarrow ((r1\_binarith \\ & X0 X1 X2) \Rightarrow (k6\_binarith X0 (k7\_binarith X0 X1 X2) = k2\_nat\_1 (k6\_binarith \\ & X0 X1) (k6\_binarith X0 X2)))))) \end{aligned} \quad (3)$$

Assume the following.

$$m1\_subset\_1 k1\_xboole\_0 k4\_ordinal1 \quad (4)$$

Assume the following.

$$\forall X0.(v1\_xcmplx\_0 X0) \Rightarrow (k2\_xcmplx\_0 X0 \ k6\_numbers = X0) \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.((v3\_card\_1 X0 \ np\_1) \wedge (m2\_finseq\_1 X0 \ k6\_margrel1)) \Rightarrow \\ ((X0 = k12\_finseq\_1 \ k6\_margrel1 \ k7\_margrel1) \Rightarrow (k6\_binarith \ np\_1 \\ X0 = k6\_numbers)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_subset\_1 X0 \ k6\_margrel1) \Rightarrow (\forall X1.(m1\_subset\_1 \\ X1 \ k6\_margrel1) \Rightarrow ((k8\_binarith \ np\_1 \ (k10\_binarith \ k6\_margrel1 \\ X0) \ (k10\_binarith \ k6\_margrel1 \ X1) = k8\_margrel1) \Leftrightarrow ((X0 = k8\_margrel1) \wedge \\ (X1 = k8\_margrel1)))) \end{aligned} \quad (7)$$

Assume the following.

$$\neg v1\_xboole\_0 \ np\_1 \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.(m2\_finseq\_1 X1 \ X0) \Leftrightarrow (m1\_finseq\_1 X1 \ X0) \quad (9)$$

Assume the following.

$$k8\_margrel1 = k2\_xboolean \quad (10)$$

Assume the following.

$$k7\_margrel1 = k1\_xboolean \quad (11)$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \quad (12)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 \ k5\_numbers) \wedge (v7\_ordinal1 \\ X1)) \Rightarrow (k2\_nat\_1 X0 \ X1 = k2\_xcmplx\_0 X0 \ X1) \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge (m1\_subset\_1 X1 \ X0)) \Rightarrow \\ (k12\_finseq\_1 X0 \ X1 = k5\_finseq\_1 X1) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X1 X0))\Rightarrow (k10\_binarith X0 X1 = k5\_finseq\_1 X1) \quad (16)$$

Assume the following.

$$\exists X0.(v1\_xboole\_0 X0)\wedge((v1\_xcmplx\_0 X0)\wedge((v1\_xreal\_0 X0)\wedge(v1\_xreal\_0 X0))) \quad (17)$$

Assume the following.

$$v1\_xboolean k2\_xboolean \quad (18)$$

Assume the following.

$$\neg v1\_xboole\_0 k6\_margrel1 \quad (19)$$

Assume the following.

$$v1\_xboolean k1\_xboolean \quad (20)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v1\_xboole\_0 X0)\wedge(v7\_ordinal1 X0))\wedge(((v3\_card\_1 X1 X0)\wedge(m1\_finseq\_1 X1 k6\_margrel1))\wedge((v3\_card\_1 X2 X0)\wedge(m1\_finseq\_1 X2 k6\_margrel1))))\Rightarrow(m1\_subset\_1 (k8\_binarith X0 X1 X2) k6\_margrel1) \quad (21)$$

Assume the following.

$$m1\_subset\_1 k7\_margrel1 k6\_margrel1 \quad (22)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v1\_xboole\_0 X0)\wedge(v7\_ordinal1 X0))\wedge(((v3\_card\_1 X1 X0)\wedge(m1\_finseq\_1 X1 k6\_margrel1))\wedge((v3\_card\_1 X2 X0)\wedge(m1\_finseq\_1 X2 k6\_margrel1))))\Rightarrow((v3\_card\_1 (k7\_binarith X0 X1 X2) X0)\wedge(m2\_finseq\_1 (k7\_binarith X0 X1 X2) k6\_margrel1)) \quad (23)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X1 X0))\Rightarrow ((v3\_card\_1 (k10\_binarith X0 X1) np\_1)\wedge(m2\_finseq\_1 (k10\_binarith X0 X1) X0)) \quad (24)$$

Assume the following.

$$\forall X0.((\neg v1\_xboole\_0 X0)\wedge(v7\_ordinal1 X0))\Rightarrow(\forall X1. ((v3\_card\_1 X1 X0)\wedge(m2\_finseq\_1 X1 k6\_margrel1))\Rightarrow(\forall X2. ((v3\_card\_1 X2 X0)\wedge(m2\_finseq\_1 X2 k6\_margrel1))\Rightarrow((r1\_binarith X0 X1 X2)\Leftrightarrow(k8\_binarith X0 X1 X2 = k7\_margrel1)))) \quad (25)$$

Assume the following.

$$\forall X0.(v1\_xboolean X0) \Leftrightarrow ((X0 = k1\_xboolean) \vee (X0 = k2\_xboolean)) \quad (26)$$

Assume the following.

$$k2\_xboolean = np\_1 \quad (27)$$

Assume the following.

$$k1\_xboolean = k6\_numbers \quad (28)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k6\_margrel1) \Rightarrow (v1\_xboolean X0) \quad (29)$$

Assume the following.

$$\forall X0.(v1\_xboolean X0) \Rightarrow (v7\_ordinal1 X0) \quad (30)$$

**Theorem 1**

$$k7\_binarith np\_1 (k10\_binarith k6\_margrel1 k7\_margrel1) (k10\_binarith k6\_margrel1 k7\_margrel1) = k10\_binarith k6\_margrel1 k7\_margrel1$$