

# t36\_heyting3 (TMWwg- BVA2acL1VTeCcqUTYqWAbUPtxDVFpf)

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Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $k4\_yellow\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_heyting3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $l1\_orders\_2 : \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $r2\_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v5\_orders\_2 : \iota \Rightarrow o$  be given. Let  $k2\_yellow\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_yellow\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_orders\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_substlat : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $r3\_orders\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v3\_orders\_2 : \iota \Rightarrow o$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $g1\_orders\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_lattices : \iota \Rightarrow o$  be given. Let  $k5\_substlat : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $v4\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v1\_lattice3 : \iota \Rightarrow o$  be given. Let  $v2\_lattice3 : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_lattice3 : \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v8\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v1\_orders\_2 : \iota \Rightarrow o$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_finsub\_1 : \iota \Rightarrow \iota$  be given. Let  $k4\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u2\_lattices : \iota \Rightarrow \iota$  be given. Let  $k3\_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_lattices : \iota \Rightarrow \iota$  be given. Let  $k4\_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_lattice3 : \iota \Rightarrow \iota$  be given. Let  $u1\_orders\_2 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.(l1\_orders\_2 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow ((r2\_lattice3 X0 k1\_xboole\_0 X1) \wedge (r1\_lattice3 X0 k1\_xboole\_0 X1))) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v5\_orders\_2 X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(((X1 = k2\_yellow\_0 \\ & X0 X2) \wedge (r2\_yellow\_0 X0 X2)) \Rightarrow ((r1\_lattice3 X0 X2 X1) \wedge (\forall X3. \\ & (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow ((r1\_lattice3 X0 X2 X3) \Rightarrow (r1\_orders\_2 \\ & X0 X3 X1)))))) \wedge (((r1\_lattice3 X0 X2 X1) \wedge (\forall X3.(m1\_subset\_1 \\ & X3 (u1\_struct\_0 X0)) \Rightarrow ((r1\_lattice3 X0 X2 X3) \Rightarrow (r1\_orders\_2 X0 X3 \\ & X1)))) \Rightarrow ((X1 = k2\_yellow\_0 X0 X2) \wedge (r2\_yellow\_0 X0 X2)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0.r1\_tarski k1\_xboole\_0 X0 \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.k1\_tarski k1\_xboole\_0 \in k1\_substlat X0 X1 \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ & (k1\_heyting3 X0 X1))) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\ & (k1\_heyting3 X0 X1))) \Rightarrow ((r3\_orders\_2 (k1\_heyting3 X0 X1) X2 X3) \Leftrightarrow \\ & (\forall X4.\neg(X4 \in X2) \wedge (\forall X5.\neg(X5 \in X3) \wedge (r1\_tarski X5 X4)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 \\ & X0) \wedge (l1\_orders\_2 X0))) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge ( \\ & m1\_subset\_1 X2 (u1\_struct\_0 X0)))) \Rightarrow ((r3\_orders\_2 X0 X1 X2) \Leftrightarrow (r1\_orders\_2 \\ & X0 X1 X2)) \end{aligned} \quad (8)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X0))) \Rightarrow (\forall X2.\forall X3.(g1\_orders\_2 X0 X1 = g1\_orders\_2 \\ & X2 X3) \Rightarrow ((X0 = X2) \wedge (X1 = X3))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.(v3\_lattices (k5\_substlat X0 X1))\wedge(v10\_lattices (k5\_substlat X0 X1)) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.(v3\_orders\_2 (k1\_heyting3 X0 X1))\wedge((v4\_orders\_2 (k1\_heyting3 X0 X1))\wedge(v5\_orders\_2 (k1\_heyting3 X0 X1))) \quad (12)$$

Assume the following.

$$\forall X0.\neg v1\_xboole\_0 (k1\_tarski X0) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.(\neg v2\_struct\_0 (k5\_substlat X0 X1))\wedge(v3\_lattices (k5\_substlat X0 X1)) \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.(v1\_lattice3 (k1\_heyting3 X0 X1))\wedge(v2\_lattice3 (k1\_heyting3 X0 X1)) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.(v3\_lattices (k5\_substlat X0 X1))\wedge(l3\_lattices (k5\_substlat X0 X1)) \quad (16)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge(l3\_lattices \\ X0)))\Rightarrow((v1\_partfun1 (k2\_lattice3 X0) (u1\_struct\_0 X0))\wedge((v1\_relat\_2 \\ (k2\_lattice3 X0))\wedge((v4\_relat\_2 (k2\_lattice3 X0))\wedge((v8\_relat\_2 \\ (k2\_lattice3 X0))\wedge(m1\_subset\_1 (k2\_lattice3 X0) (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)))))))) \quad (17) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.l1\_orders\_2 (k1\_heyting3 X0 X1) \quad (18)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0)))\Rightarrow((v1\_orders\_2 (g1\_orders\_2 X0 X1))\wedge(l1\_orders\_2 (g1\_orders\_2 X0 X1))) \quad (19)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v3\_lattices\ X2)\wedge(l3\_lattices \\ & X2))\Rightarrow((X2 = k5\_substlat\ X0\ X1)\Leftrightarrow((u1\_struct\_0\ X2 = k1\_substlat\ X0 \\ & X1)\wedge(\forall X3.(m2\_subset\_1\ X3\ (k5\_finsub\_1\ (k4\_partfun1\ X0 \\ & X1))\ (k1\_substlat\ X0\ X1))\Rightarrow(\forall X4.(m2\_subset\_1\ X4\ (k5\_finsub\_1 \\ & (k4\_partfun1\ X0\ X1))\ (k1\_substlat\ X0\ X1))\Rightarrow((k1\_binop\_1\ (u2\_lattices \\ & X2)\ X3\ X4 = k3\_substlat\ X0\ X1\ (k2\_substlat\ X0\ X1\ X3\ X4))\wedge(k1\_binop\_1 \\ & (u1\_lattices\ X2)\ X3\ X4 = k3\_substlat\ X0\ X1\ (k4\_substlat\ X0\ X1\ X3\ X4)))))) \\ & \hspace{15em} (20) \end{aligned}$$

Assume the following.

$$k1\_xboole\_0 = the\ (\lambda X0 : \iota.v1\_xboole\_0\ X0) \quad (21)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v10\_lattices\ X0)\wedge(l3\_lattices \\ & X0)))\Rightarrow(k3\_lattice3\ X0 = g1\_orders\_2\ (u1\_struct\_0\ X0)\ (k2\_lattice3 \\ & X0)) \quad (22) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(X1 = k1\_tarski\ X0)\Leftrightarrow(\forall X2.(X2 \in X1)\Leftrightarrow \\ & (X2 = X0)) \quad (23) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.k1\_heyting3\ X0\ X1 = k3\_lattice3\ (k5\_substlat\ X0\ X1) \quad (24)$$

Assume the following.

$$\forall X0.(l1\_orders\_2\ X0)\Rightarrow(k4\_yellow\_0\ X0 = k2\_yellow\_0\ X0\ k1\_xboole\_0) \quad (25)$$

Assume the following.

$$\forall X0.(l1\_orders\_2\ X0)\Rightarrow((v2\_lattice3\ X0)\Rightarrow(\neg v2\_struct\_0\ X0)) \quad (26)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_orders\_2\ X0)\Rightarrow((v1\_orders\_2\ X0)\Rightarrow(X0 = g1\_orders\_2 \\ & (u1\_struct\_0\ X0)\ (u1\_orders\_2\ X0))) \quad (27) \end{aligned}$$

**Theorem 1**

$$\forall X0.(m1\_subset\_1\ X0\ k5\_numbers)\Rightarrow(k4\_yellow\_0\ (k1\_heyting3\ k5\_numbers\ (k6\_domain\_1\ k5\_numbers\ X0)) = k1\_tarski\ k1\_xboole\_0)$$