

# t22\_heyting1

(TMXi2smUqv2Ng5bbaxsa6pkb8nXQUvqMget)

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Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k12\_normform : \iota \Rightarrow \iota$  be given. Let  $r3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k11\_heyting1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v4\_finsub\_1 : \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_normform : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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  $k7\_normform : \iota \Rightarrow \iota$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v3\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $k6\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.\forall X1.\forall X2.\neg(X0 \in X1) \wedge ((m1\_subset\_1 X1 (k1\_zfmisc\_1 X2)) \wedge (v1\_xboole\_0 X2)) \quad (1)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((X0 \in X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 X2))) \Rightarrow (m1\_subset\_1 X0 X2) \quad (2)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(((\neg v1\_xboole\_0 X0) \wedge (v4\_finsub\_1 X0)) \wedge (((\neg v1\_xboole\_0 X1) \wedge (v4\_finsub\_1 X1)) \wedge ((m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1)) \wedge (m1\_subset\_1 X3 (k2\_zfmisc\_1 X0 X1))))) \Rightarrow (r1\_normform X0 X1 X2 X2) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 (k12\_normform X0))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 (k12\_normform X0))) \Rightarrow ((\forall X3. (m2\_subset\_1 X3 (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)) (k7\_normform X0)) \Rightarrow (\neg(X3 \in X1) \wedge (\forall X4. (m2\_subset\_1 X4 (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0)) (k7\_normform X0)) \Rightarrow (\neg(X4 \in X2) \wedge (r1\_normform (k5\_finsub\_1 X0) (k5\_finsub\_1 X0) X4 X3)))))) \Rightarrow (r3\_lattices (k12\_normform X0) X1 X2))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0. (\neg v2\_struct\_0 (k12\_normform X0)) \wedge (v3\_lattices (k12\_normform X0)) \quad (6)$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (7)$$

Assume the following.

$$\forall X0. \neg v1\_xboole\_0 (k7\_normform X0) \quad (8)$$

Assume the following.

$$\forall X0. (\neg v1\_xboole\_0 (k5\_finsub\_1 X0)) \wedge (v4\_finsub\_1 (k5\_finsub\_1 X0)) \quad (9)$$

Assume the following.

$$\forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2. (m2\_subset\_1 X2 X0 X1) \Rightarrow (m1\_subset\_1 X2 X0)) \quad (10)$$

Assume the following.

$$\forall X0. (l3\_lattices X0) \Rightarrow ((l1\_lattices X0) \wedge (l2\_lattices X0)) \quad (11)$$

Assume the following.

$$\forall X0. (l2\_lattices X0) \Rightarrow (l1\_struct\_0 X0) \quad (12)$$

Assume the following.

$$\forall X0. m1\_subset\_1 (k7\_normform X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k5\_finsub\_1 X0) (k5\_finsub\_1 X0))) \quad (13)$$

Assume the following.

$$\forall X0. \forall X1. m1\_subset\_1 (k6\_subset\_1 X0 X1) (k1\_zfmisc\_1 X0) \quad (14)$$

Assume the following.

$$\forall X0.v4\_finsub\_1 (k5\_finsub\_1 X0) \quad (15)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0) \wedge \\ & (((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1)))))) \wedge (m1\_subset\_1 X3 X0))) \Rightarrow (m1\_subset\_1 ( \\ & k3\_funct\_2 X0 X1 X2 X3) X1) \end{aligned} \quad (16)$$

Assume the following.

$$\forall X0.(v3\_lattices (k12\_normform X0) \wedge (l3\_lattices (k12\_normform X0))) \quad (17)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 (k12\_normform \\ & X0))) \Rightarrow ((v1\_funct\_1 (k11\_heyting1 X0 X1)) \wedge ((v1\_funct\_2 (k11\_heyting1 \\ & X0 X1) (u1\_struct\_0 (k12\_normform X0)) (u1\_struct\_0 (k12\_normform \\ & X0))) \wedge (m1\_subset\_1 (k11\_heyting1 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (u1\_struct\_0 (k12\_normform X0)) (u1\_struct\_0 (k12\_normform X0))))))) \end{aligned} \quad (18)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 (k12\_normform \\ & X0))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 \\ & (k12\_normform X0)) (u1\_struct\_0 (k12\_normform X0))) \wedge (m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 (k12\_normform X0)) \\ & (u1\_struct\_0 (k12\_normform X0))))))) \Rightarrow ((X2 = k11\_heyting1 X0 X1) \Leftrightarrow \\ & (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 (k12\_normform X0))) \Rightarrow \\ & (k3\_funct\_2 (u1\_struct\_0 (k12\_normform X0)) (u1\_struct\_0 (k12\_normform \\ & X0)) X2 X3 = k6\_subset\_1 X1 X3)))) \end{aligned} \quad (19)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \Rightarrow (v1\_xboole\_0 X1)) \quad (20)$$

### Theorem 1

$$\begin{aligned} & \forall X0.\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 (k12\_normform \\ & X0))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 (k12\_normform \\ & X0))) \Rightarrow (r3\_lattices (k12\_normform X0) (k3\_funct\_2 (u1\_struct\_0 \\ & (k12\_normform X0)) (u1\_struct\_0 (k12\_normform X0)) (k11\_heyting1 \\ & X0 X1) X2) X1)) \end{aligned}$$