

t13_boolealg

(TMVMw1Twiv4SjK94H3XTF7iDh3UJz7RZ8V2)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v10_lattices : \iota \Rightarrow o$ be given. Let $v13_lattices : \iota \Rightarrow o$ be given. Let $l3_lattices : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r3_boolealg : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r3_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v7_lattices : \iota \Rightarrow o$ be given. Let $v8_lattices : \iota \Rightarrow o$ be given. Let $v9_lattices : \iota \Rightarrow o$ be given. Let $r1_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_lattices : \iota \Rightarrow \iota$ be given. Let $r1_boolealg : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v6_lattices : \iota \Rightarrow o$ be given. Let $r2_boolealg : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $k4_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $v4_lattices : \iota \Rightarrow o$ be given. Let $v5_lattices : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} \forall X0. (&(\neg v2_struct_0 X0) \wedge ((v7_lattices X0) \wedge ((v8_lattices \\ &X0) \wedge ((v9_lattices X0) \wedge (l3_lattices X0)))) \Rightarrow (\forall X1. (m1_subset_1 \\ &X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. (m1_subset_1 X2 (u1_struct_0 \\ &X0)) \Rightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow ((r1_lattices \\ &X0 X1 X2) \Rightarrow (r1_lattices X0 (k2_lattices X0 X1 X3) (k2_lattices X0 \\ &X2 X3)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0. (&(\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge ((v13_lattices \\ &X0) \wedge (l3_lattices X0)))) \Rightarrow (\forall X1. (m1_subset_1 X1 (u1_struct_0 \\ &X0)) \Rightarrow ((r3_lattices X0 X1 (k5_lattices X0)) \Rightarrow (r1_boolealg X0 X1 \\ &(k5_lattices X0)))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (&((\neg v2_struct_0 X0) \wedge ((v10_lattices \\ &X0) \wedge (l3_lattices X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (\\ &m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow ((r3_boolealg X0 X1 X2) \Rightarrow (r3_boolealg \\ &X0 X2 X1)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v6_lattices \\ & X0) \wedge (v8_lattices X0) \wedge (v9_lattices X0) \wedge (l3_lattices X0)))) \wedge \\ & ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 \\ & X0))) \Rightarrow ((r3_lattices X0 X1 X2) \Leftrightarrow (r1_lattices X0 X1 X2)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v10_lattices \\ & X0) \wedge (l3_lattices X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (\\ & m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow ((r3_boolealg X0 X1 X2) \Leftrightarrow (r2_boolealg \\ & X0 X1 X2)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v10_lattices \\ & X0) \wedge (l3_lattices X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (\\ & m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow ((r1_boolealg X0 X1 X2) \Leftrightarrow (X1 = \\ & X2)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v6_lattices \\ & X0) \wedge (l1_lattices X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (\\ & m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow (k4_lattices X0 X1 X2 = k2_lattices \\ & X0 X1 X2) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0. (l3_lattices X0) \Rightarrow ((l1_lattices X0) \wedge (l2_lattices X0)) \quad (8)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 X0) \wedge (l1_lattices X0)) \Rightarrow (m1_subset_1 \\ (k5_lattices X0) (u1_struct_0 X0)) \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v6_lattices \\ & X0) \wedge (l1_lattices X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (\\ & m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow (m1_subset_1 (k4_lattices \\ & X0 X1 X2) (u1_struct_0 X0)) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((v10_lattices X0) \wedge (l3_lattices \\ & X0))) \Rightarrow (\forall X1. (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow ((r2_boolealg X0 X1 X2) \Leftrightarrow (k4_lattices \\ & X0 X1 X2 \neq k5_lattices X0)))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0. (l3_lattices\ X0) \Rightarrow & (((\neg v2_struct_0\ X0) \wedge (v10_lattices \\ X0)) \Rightarrow & ((\neg v2_struct_0\ X0) \wedge ((v4_lattices\ X0) \wedge ((v5_lattices\ X0) \wedge \\ ((v6_lattices\ X0) \wedge & ((v7_lattices\ X0) \wedge ((v8_lattices\ X0) \wedge (v9_lattices \\ X0)))))))) & \quad (12) \end{aligned}$$

Theorem 1

$$\begin{aligned} \forall X0. ((\neg v2_struct_0\ X0) \wedge & ((v10_lattices\ X0) \wedge ((v13_lattices \\ X0) \wedge (l3_lattices\ X0))) \Rightarrow & (\forall X1. (m1_subset_1\ X1\ (u1_struct_0 \\ X0)) \Rightarrow & (\forall X2. (m1_subset_1\ X2\ (u1_struct_0\ X0)) \Rightarrow (\forall X3. \\ (m1_subset_1\ X3\ (u1_struct_0\ X0)) \Rightarrow & (((r3_boolealg\ X0\ X1\ X2) \wedge (r3_lattices \\ X0\ X2\ X3)) \Rightarrow & (r3_boolealg\ X0\ X1\ X3)))))) \end{aligned}$$