

# t5\_lattice3

(TMQVBgreGF5fEoAK71Wa3h2jC1bLcdcpwKi)

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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  $k1\_lattice3 : \iota \Rightarrow \iota$  be given. Let  $k7\_lattices : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_subset.1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_xboole.0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_xboole.0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v14\_lattices : \iota \Rightarrow o$  be given. Let  $k6\_lattices : \iota \Rightarrow \iota$  be given. Let  $k2\_xboole.0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v13\_lattices : \iota \Rightarrow o$  be given. Let  $k5\_lattices : \iota \Rightarrow \iota$  be given. Let  $k1\_xboole.0 : \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_struct.0 : \iota \Rightarrow o$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $v17\_lattices : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $k3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v6\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $k2\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v4\_lattices : \iota \Rightarrow o$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $k1\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_xboole.0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_lattices : \iota \Rightarrow o$  be given. Let  $v5\_lattices : \iota \Rightarrow o$  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. Assume the following.

$$\forall X0. \forall X1. (r1\_xboole.0 X0 X1) \Leftrightarrow (k4\_xboole.0 X0 X1 = X0) \quad (1)$$

Assume the following.

$$\forall X0. (v14\_lattices (k1\_lattice3 X0)) \wedge (k6\_lattices (k1\_lattice3 X0) = X0) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. k4\_xboole.0 (k2\_xboole.0 X0 X1) X2 = k2\_xboole.0 (k4\_xboole.0 X0 X2) (k4\_xboole.0 X1 X2) \quad (3)$$

Assume the following.

$$\forall X0. (v13\_lattices (k1\_lattice3 X0)) \wedge (k5\_lattices (k1\_lattice3 X0) = k1\_xboole.0) \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. (k4\_xboole.0 X0 X1 = k1\_xboole.0) \Leftrightarrow (r1\_tarski X0 X1) \quad (5)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge ((v17\_lattices X0) \wedge (l3\_lattices X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k3\_lattices X0 (k7\_lattices X0 X1) X1 = k6\_lattices X0)) \quad (6)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge ((v17\_lattices X0) \wedge (l3\_lattices X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k4\_lattices X0 (k7\_lattices X0 X1) X1 = k5\_lattices X0)) \quad (7)$$

Assume the following.

$$\forall X0.k2\_xboole\_0 X0 k1\_xboole\_0 = X0 \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.r1\_tarski X0 X0 \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.k6\_subset\_1 X0 X1 = k4\_xboole\_0 X0 X1 \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0) \wedge ((v6\_lattices X0) \wedge (l1\_lattices X0))) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 X0)))) \Rightarrow (k4\_lattices X0 X1 X2 = k2\_lattices X0 X1 X2) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0) \wedge ((v4\_lattices X0) \wedge (l2\_lattices X0))) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 X0)))) \Rightarrow (k3\_lattices X0 X1 X2 = k1\_lattices X0 X1 X2) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((m1\_subset\_1 X1 (u1\_struct\_0 (k1\_lattice3 X0))) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 (k1\_lattice3 X0)))) \Rightarrow (((X1 = X3) \wedge (X2 = X4)) \Rightarrow (k2\_lattices (k1\_lattice3 X0) X1 X2 = k3\_xboole\_0 X3 X4)) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((m1\_subset\_1 X1 (u1\_struct\_0 (k1\_lattice3 X0))) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 (k1\_lattice3 X0)))) \Rightarrow (((X1 = X3) \wedge (X2 = X4)) \Rightarrow (k1\_lattices (k1\_lattice3 X0) X1 X2 = k2\_xboole\_0 X3 X4)) \quad (14)$$

Assume the following.

$$\forall X0.(v3\_lattices (k1\_lattice3 X0)) \wedge (v17\_lattices (k1\_lattice3 X0)) \quad (15)$$

Assume the following.

$$\forall X0.(v3\_lattices (k1\_lattice3 X0)) \wedge (v10\_lattices (k1\_lattice3 X0)) \quad (16)$$

Assume the following.

$$\forall X0.(\neg v2\_struct\_0 (k1\_lattice3 X0)) \wedge (v3\_lattices (k1\_lattice3 X0)) \quad (17)$$

Assume the following.

$$\forall X0.(l3\_lattices X0) \Rightarrow ((l1\_lattices X0) \wedge (l2\_lattices X0)) \quad (18)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge (l3\_lattices X0)) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow (m1\_subset\_1 (k7\_lattices X0 X1) (u1\_struct\_0 X0)) \quad (19)$$

Assume the following.

$$\forall X0.(v3\_lattices (k1\_lattice3 X0)) \wedge (l3\_lattices (k1\_lattice3 X0)) \quad (20)$$

Assume the following.

$$\forall X0.\forall X1.(r1\_xboole\_0 X0 X1) \Leftrightarrow (k3\_xboole\_0 X0 X1 = k1\_xboole\_0) \quad (21)$$

Assume the following.

$$\forall X0.\forall X1.k3\_xboole\_0 X0 X1 = k3\_xboole\_0 X1 X0 \quad (22)$$

Assume the following.

$$\forall X0.\forall X1.k2\_xboole\_0 X0 X1 = k2\_xboole\_0 X1 X0 \quad (23)$$

Assume the following.

$$\forall X0.(l3\_lattices X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v10\_lattices X0)) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge ((v4\_lattices X0) \wedge ((v5\_lattices X0) \wedge ((v6\_lattices X0) \wedge ((v7\_lattices X0) \wedge ((v8\_lattices X0) \wedge (v9\_lattices X0)))))))) \quad (24)$$

**Theorem 1**

$$\forall X0.\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 (k1\_lattice3 X0))) \Rightarrow (k7\_lattices (k1\_lattice3 X0) X1 = k6\_subset\_1 X0 X1)$$