

# l81\_normform

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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  $k2\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $k8\_normform : \iota \Rightarrow \iota$  be given. Let  $k10\_normform : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_normform : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v3\_lattices : \iota \Rightarrow o$  be given. Let  $l1\_lattices : \iota \Rightarrow o$  be given. Let  $u1\_lattices : \iota \Rightarrow \iota$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $l2\_lattices : \iota \Rightarrow o$  be given. Let  $u2\_lattices : \iota \Rightarrow \iota$  be given. Let  $k5\_setwiseo : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (m2\_subset\_1 X1 (k5\_finsub\_1 (k7\_normform \\ & X0)) (k8\_normform X0)) \Rightarrow (\forall X2. (m2\_subset\_1 X2 (k5\_finsub\_1 \\ & (k7\_normform X0)) (k8\_normform X0)) \Rightarrow (\forall X3. (m2\_subset\_1 \\ & X3 (k5\_finsub\_1 (k7\_normform X0)) (k8\_normform X0)) \Rightarrow (k10\_normform \\ & X0 X1 (k10\_normform X0 X2 X3) = k10\_normform X0 (k10\_normform X0 X1 \\ & X2) X3))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (m1\_subset\_1 X1 (k5\_finsub\_1 (k7\_normform \\ & X0))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (k5\_finsub\_1 (k7\_normform \\ & X0))) \Rightarrow (k9\_normform X0 (k10\_normform X0 X1 (k9\_normform X0 X2)) = \\ & k9\_normform X0 (k10\_normform X0 X1 X2))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (m1\_subset\_1 X1 (k5\_finsub\_1 (k7\_normform \\ & X0))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (k5\_finsub\_1 (k7\_normform \\ & X0))) \Rightarrow (k9\_normform X0 (k10\_normform X0 (k9\_normform X0 X1) X2) = \\ & k9\_normform X0 (k10\_normform X0 X1 X2))) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((X0 \in X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 X2))) \Rightarrow (m1\_subset\_1 X0 X2) \quad (4)$$

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.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1)) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))))) \wedge ((m1\_subset\_1 X2 X0) \wedge (m1\_subset\_1 X3 X0))) \Rightarrow (k5\_binop\_1 X0 X1 X2 X3 = k1\_binop\_1 X1 X2 X3) \quad (7)$$

Assume the following.

$$\forall X0.(\neg v2\_struct\_0 (k12\_normform X0)) \wedge (v3\_lattices (k12\_normform X0)) \quad (8)$$

Assume the following.

$$\forall X0.\neg v1\_xboole\_0 (k8\_normform X0) \quad (9)$$

Assume the following.

$$\forall X0.(l1\_lattices X0) \Rightarrow ((v1\_funct\_1 (u1\_lattices X0)) \wedge ((v1\_funct\_2 (u1\_lattices X0) (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 (u1\_lattices X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 X0)))))) \quad (10)$$

Assume the following.

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

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1 X1 (k5\_finsub\_1 (k7\_normform X0))) \Rightarrow (m2\_subset\_1 (k9\_normform X0 X1) (k5\_finsub\_1 (k7\_normform X0) (k8\_normform X0))) \quad (12)$$

Assume the following.

$$\forall X0.m1\_subset\_1 (k8\_normform X0) (k1\_zfmisc\_1 (k5\_finsub\_1 (k7\_normform X0))) \quad (13)$$

Assume the following.

$$\forall X0.(v3\_lattices (k12\_normform X0)) \wedge (l3\_lattices (k12\_normform X0)) \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1\_subset\_1 X1 (k5\_finsub\_1 \\ & (k7\_normform X0))) \wedge (m1\_subset\_1 X2 (k5\_finsub\_1 (k7\_normform \\ & X0)))) \Rightarrow (m1\_subset\_1 (k10\_normform X0 X1 X2) (k5\_finsub\_1 (k7\_normform \\ & X0))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_lattices X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\ & (u1\_struct\_0 X0)) \Rightarrow (k2\_lattices X0 X1 X2 = k5\_binop\_1 (u1\_struct\_0 \\ & X0) (u1\_lattices X0) X1 X2))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v3\_lattices X1) \wedge (l3\_lattices X1)) \Rightarrow ( \\ & (X1 = k12\_normform X0) \Leftrightarrow ((u1\_struct\_0 X1 = k8\_normform X0) \wedge (\forall X2. \\ & (m2\_subset\_1 X2 (k5\_finsub\_1 (k7\_normform X0)) (k8\_normform X0)) \Rightarrow \\ & (\forall X3.(m2\_subset\_1 X3 (k5\_finsub\_1 (k7\_normform X0)) (k8\_normform \\ & X0)) \Rightarrow ((k1\_binop\_1 (u2\_lattices X1) X2 X3 = k9\_normform X0 (k5\_setwiseo \\ & (k7\_normform X0) X2 X3)) \wedge (k1\_binop\_1 (u1\_lattices X1) X2 X3 = k9\_normform \\ & X0 (k10\_normform X0 X2 X3)))))) \end{aligned} \quad (17)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \Rightarrow (v1\_xboole\_0 X1)) \quad (18)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 (k12\_normform \\ & X0))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 (k12\_normform \\ & X0))) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 (k12\_normform \\ & X0))) \Rightarrow (k2\_lattices (k12\_normform X0) X1 (k2\_lattices (k12\_normform \\ & X0) X2 X3) = k2\_lattices (k12\_normform X0) (k2\_lattices (k12\_normform \\ & X0) X1 X2) X3))) \end{aligned}$$