

l101_interva1 (TM- Mue2KNxgAhUfZhbsNdsD7YXZ4TrJPNhW4)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v3_roughs_1 : \iota \Rightarrow o$ be given. Let $l1_orders_2 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k21_interval : \iota \Rightarrow \iota$ be given. Let $k2_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m2_interval : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_interval : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k17_interval : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v3_lattices : \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow \iota$ 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 $k16_interval : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 \\ & X0))) \Rightarrow (\forall X1.(m2_interval X1 X0) \Rightarrow (\forall X2.(m2_interval \\ & X2 X0) \Rightarrow (r2_interval X0 (k17_interval X0 X1 X2) (k17_interval X0 \\ & X2 X1)))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 \\ & X0) \wedge (l1_orders_2 X0))) \wedge ((m2_interval X1 X0) \wedge (m2_interval X2 \\ & X0))) \Rightarrow ((r2_interval X0 X1 X2) \Leftrightarrow (X1 = X2)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. (((v1_funct_1 X1) \wedge \\ & ((v1_funct_2 X1 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))))) \wedge ((m1_subset_1 X2 X0) \wedge \\ & (m1_subset_1 X3 X0))) \Rightarrow (k5_binop_1 X0 X1 X2 X3 = k1_binop_1 X1 X2 X3) \end{aligned} \tag{4}$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \Rightarrow ((\neg v2_struct_0 (k21_interval1 X0)) \wedge (v3_lattices (k21_interval1 X0))) \quad (5)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \Rightarrow (\neg v1_xboole_0 (k18_interval1 X0)) \quad (6)$$

Assume the following.

$$\forall X0.(l1_lattices X0) \Rightarrow ((v1_funct_1 (u1_lattices X0)) \wedge ((v1_funct_2 (u1_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 X0)) \wedge (m1_subset_1 (u1_lattices X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 X0)))))) \quad (7)$$

Assume the following.

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

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \Rightarrow ((v3_lattices (k21_interval1 X0)) \wedge (l3_lattices (k21_interval1 X0))) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \wedge ((m2_interval1 X1 X0) \wedge (m2_interval1 X2 X0))) \Rightarrow (m2_interval1 (k17_interval1 X0 X1 X2) X0) \quad (10)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge (l1_lattices X0)) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (k2_lattices X0 X1 X2 = k5_binop_1 (u1_struct_0 X0) (u1_lattices X0) X1 X2))) \quad (11)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \Rightarrow (\forall X1.((v3_lattices X1) \wedge (l3_lattices X1)) \Rightarrow ((X1 = k21_interval1 X0) \Leftrightarrow ((u1_struct_0 X1 = k18_interval1 X0) \wedge (\forall X2.(m1_subset_1 X2 (k18_interval1 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (k18_interval1 X0)) \Rightarrow (\forall X4.(m2_interval1 X4 X0) \Rightarrow (\forall X5.(m2_interval1 X5 X0) \Rightarrow (((X2 = X4) \wedge (X3 = X5)) \Rightarrow ((k1_binop_1 (u2_lattices X1) X2 X3 = k16_interval1 X0 X4 X5) \wedge (k1_binop_1 (u1_lattices X1) X2 X3 = k17_interval1 X0 X4 X5)))))))))) \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 \\ X0))) \Rightarrow (\forall X1.(X1 = k18_interval X0) \Leftrightarrow (\forall X2.(X2 \in X1) \Leftrightarrow \\ (m2_interval X2 X0))) \end{aligned} \quad (13)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 \\ X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 (k21_interval \\ X0))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 (k21_interval \\ X0))) \Rightarrow (k2_lattices (k21_interval X0) X1 X2 = k2_lattices (k21_interval \\ X0) X2 X1))) \end{aligned}$$