

l103_interva1 (TMQiBwhRKhRi- WHubK1g3uh6qYmGrKuUYcUu)

October 27, 2020

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 $k18_interval1 : \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_lattices : \iota \Rightarrow \iota$ be given. Let $k21_interval1 : \iota \Rightarrow \iota$ be given. Let $u2_lattices : \iota \Rightarrow \iota$ be given. Let $m2_interval1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_interval1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k17_interval1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k16_interval1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v3_lattices : \iota \Rightarrow o$ be given. Let $l3_lattices : \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 \\ & X0))) \Rightarrow (\forall X1.(m2_interval1 X1 X0) \Rightarrow (\forall X2.(m2_interval1 \\ & X2 X0) \Rightarrow (\forall X3.(m2_interval1 X3 X0) \Rightarrow (r2_interval1 X0 (k17_interval1 \\ & X0 X1 (k16_interval1 X0 X2 X3)) (k16_interval1 X0 (k17_interval1 X0 \\ & X1 X2) (k17_interval1 X0 X1 X3)))))) \end{aligned} \tag{1}$$

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.

$$\forall X0. \forall X1.(X0 \in X1) \Rightarrow (m1_subset_1 X0 X1) \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2.(((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 \\ & X0) \wedge (l1_orders_2 X0))) \wedge ((m2_interval1 X1 X0) \wedge (m2_interval1 X2 \\ & X0))) \Rightarrow ((r2_interval1 X0 X1 X2) \Leftrightarrow (X1 = X2)) \end{aligned} \tag{4}$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \Rightarrow (\exists X1.m2_interval1 X1 X0) \tag{5}$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \Rightarrow ((v3_lattices (k21_interval1 X0)) \wedge (l3_lattices (k21_interval1 X0))) \quad (6)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \wedge ((m2_interval1 X1 X0) \wedge (m2_interval1 X2 X0))) \Rightarrow (m2_interval1 (k17_interval1 X0 X1 X2) X0) \quad (7)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \wedge ((m2_interval1 X1 X0) \wedge (m2_interval1 X2 X0))) \Rightarrow (m2_interval1 (k16_interval1 X0 X1 X2) X0) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \Rightarrow (\forall X1. ((v3_lattices X1) \wedge (l3_lattices X1))) \Rightarrow ((X1 = \\ & k21_interval1 X0) \Leftrightarrow ((u1_struct_0 X1 = k18_interval1 X0) \wedge (\forall X2. \\ & (m1_subset_1 X2 (k18_interval1 X0)) \Rightarrow (\forall X3. (m1_subset_1 \\ & X3 (k18_interval1 X0)) \Rightarrow (\forall X4. (m2_interval1 X4 X0) \Rightarrow (\forall X5. \\ & (m2_interval1 X5 X0) \Rightarrow (((X2 = X4) \wedge (X3 = X5)) \Rightarrow ((k1_binop_1 (u2_lattices \\ & X1) X2 X3 = k16_interval1 X0 X4 X5) \wedge (k1_binop_1 (u1_lattices X1) X2 \\ & X3 = k17_interval1 X0 X4 X5)))))))))) \quad (9) \end{aligned}$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \Rightarrow (\forall X1. (X1 = k18_interval1 X0) \Leftrightarrow (\forall X2. (X2 \in X1) \Leftrightarrow (m2_interval1 X2 X0))) \quad (10)$$

Assume the following.

$$\forall X0. (v1_xboole_0 X0) \Leftrightarrow (\forall X1. \neg X1 \in X0) \quad (11)$$

Theorem 1

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((v3_roughs_1 X0) \wedge (l1_orders_2 X0))) \Rightarrow (\forall X1. (m1_subset_1 X1 (k18_interval1 X0)) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (k18_interval1 X0)) \Rightarrow (\forall X3. (m1_subset_1 \\ & X3 (k18_interval1 X0)) \Rightarrow (k1_binop_1 (u1_lattices (k21_interval1 \\ & X0)) X1 (k1_binop_1 (u2_lattices (k21_interval1 X0)) X2 X3) = k1_binop_1 \\ & (u2_lattices (k21_interval1 X0)) (k1_binop_1 (u1_lattices (k21_interval1 \\ & X0)) X1 X2) (k1_binop_1 (u1_lattices (k21_interval1 X0)) X1 X3)))))) \end{aligned}$$