l99_interva1 (TMPMnm32muFGg1YBsxgvz8zhzdX6tmeemmF)

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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 $k18\_interva1 : \iota \Rightarrow \iota$ be given. Let $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2\_lattices : \iota \Rightarrow \iota$ be given. Let $k21\_interva1 : \iota \Rightarrow \iota$ be given. Let $u1\_lattices : \iota \Rightarrow \iota$ be given. Let $m2\_interva1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2\_interva1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k16\_interva1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k17\_interva1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v3\_roughs\_1\ X0) \wedge (l1\_orders\_2\ X0))) \Rightarrow (\forall X1.(m2\_interva1\ X1\ X0) \Rightarrow (\forall X2.(m2\_interva1\ X2\ X0) \Rightarrow (r2\_interva1\ X0\ (k16\_interva1\ X0\ X1\ (k17\_interva1\ X0\ X1\ X2))\ X1))) \tag{1}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v3\_roughs\_1\ X0) \wedge (l1\_orders\_2\ X0))) \Rightarrow (\forall X1.(m2\_interva1\ X1\ X0) \Rightarrow (\forall X2.(m2\_interva1\ X2\ X0) \Rightarrow (r2\_interva1\ X0\ (k17\_interva1\ X0\ X1\ X2)\ (k17\_interva1\ X0\ X2\ X1)))) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v3\_roughs\_1\ X0) \wedge (l1\_orders\_2\ X0))) \Rightarrow (\forall X1.(m2\_interva1\ X1\ X0) \Rightarrow (\forall X2.(m2\_interva1\ X2\ X0) \Rightarrow (r2\_interva1\ X0\ (k16\_interva1\ X0\ X1\ X2)\ (k16\_interva1\ X0\ X2\ X1)))) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1\ X0\ X1) \Rightarrow ((v1\_xboole\_0\ X1) \vee (X0 \in X1)) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1\_subset\_1\ X0\ X1) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge((v3\_roughs\_1\ X0)\wedge(l1\_orders\_2\ X0)))\wedge((m2\_interva1\ X1\ X0)\wedge(m2\_interva1\ X2\ X0)))\Rightarrow((r2\_interva1\ X0\ X1\ X2)\Leftrightarrow(X1 = X2)) \tag{6}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_roughs\_1\ X0)\wedge(l1\_orders\_2\ X0)))\Rightarrow(\exists X1.m2\_interva1\ X1\ X0) \tag{7}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_roughs\_1\ X0)\wedge(l1\_orders\_2\ X0)))\Rightarrow((v3\_lattices\ (k21\_interva1\ X0))\wedge(l3\_lattices\ (k21\_interva1\ X0))) \tag{8}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge((v3\_roughs\_1\ X0)\wedge(l1\_orders\_2\ X0)))\wedge((m2\_interva1\ X1\ X0)\wedge(m2\_interva1\ X2\ X0)))\Rightarrow(m2\_interva1\ (k17\_interva1\ X0\ X1\ X2)\ X0) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge((v3\_roughs\_1\ X0)\wedge(l1\_orders\_2\ X0)))\wedge((m2\_interva1\ X1\ X0)\wedge(m2\_interva1\ X2\ X0)))\Rightarrow(m2\_interva1\ (k16\_interva1\ X0\ X1\ X2)\ X0) \tag{10}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_roughs\_1\ X0)\wedge(l1\_orders\_2\ X0)))\Rightarrow(\forall X1.((v3\_lattices\ X1)\wedge(l3\_lattices\ X1))\Rightarrow((X1 = k21\_interva1\ X0)\Leftrightarrow((u1\_struct\_0\ X1 = k18\_interva1\ X0)\wedge(\forall X2.(m1\_subset\_1\ X2\ (k18\_interva1\ X0))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (k18\_interva1\ X0))\Rightarrow(\forall X4.(m2\_interva1\ X4\ X0)\Rightarrow(\forall X5.(m2\_interva1\ X5\ X0)\Rightarrow(((X2 = X4)\wedge(X3 = X5))\Rightarrow((k1\_binop\_1\ (u2\_lattices\ X1)\ X2\ X3 = k16\_interva1\ X0\ X4\ X5)\wedge(k1\_binop\_1\ (u1\_lattices\ X1)\ X2\ X3 = k17\_interva1\ X0\ X4\ X5)))))))))) \tag{11}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_roughs\_1\ X0)\wedge(l1\_orders\_2\ X0)))\Rightarrow(\forall X1.(X1 = k18\_interva1\ X0)\Leftrightarrow(\forall X2.(X2 \in X1)\Leftrightarrow(m2\_interva1\ X2\ X0))) \tag{12}$$

Assume the following.

$$\forall X0.(v1\_xboole\_0\ X0)\Leftrightarrow(\forall X1.\neg X1 \in X0) \tag{13}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_roughs\_1\ X0)\wedge(l1\_orders\_2\ X0)))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k18\_interva1\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (k18\_interva1\ X0))\Rightarrow(k1\_binop\_1\ (u2\_lattices\ (k21\_interva1\ X0))\ (k1\_binop\_1\ (u1\_lattices\ (k21\_interva1\ X0))\ X1\ X2)\ X2 = X2)))$$