

t25_lattice5 (TMGHook- MgCMPK1mCwMfZWkiMcri8tMXp8CY)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v3_orders_2 : \iota \Rightarrow o$ be given. Let $v4_orders_2 : \iota \Rightarrow o$ be given. Let $v5_orders_2 : \iota \Rightarrow o$ be given. Let $v1_lattice3 : \iota \Rightarrow o$ be given. Let $v2_lattice3 : \iota \Rightarrow o$ be given. Let $v1_yellow_0 : \iota \Rightarrow o$ be given. Let $l1_orders_2 : \iota \Rightarrow o$ be given. Let $v3_ordinal1 : \iota \Rightarrow o$ 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 $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $m1_lattice5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7_lattice5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $r2_wellord2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k4_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v5_ordinal1 : \iota \Rightarrow o$ be given. Let $v2_funct_1 : \iota \Rightarrow o$ be given. Let $v1_card_1 : \iota \Rightarrow o$ be given. Let $k5_domain_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r3_orders_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_lattice5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k13_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. (r2_wellord2 X0 X1) \Leftrightarrow (r2_tarski X0 X1) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. ((v1_relat_1 X1) \wedge (v5_relat_1 X1 X0)) \Rightarrow (k2_relset_1 X0 X1 = k10_xtuple_0 X1) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X0) \wedge (((v3_orders_2 X1) \wedge ((v4_orders_2 X1) \wedge ((v5_orders_2 X1) \wedge ((v1_lattice3 X1) \wedge \\ & ((v2_lattice3 X1) \wedge ((v1_yellow_0 X1) \wedge (l1_orders_2 X1)))))) \wedge \\ & ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 X0) (u1_struct_0 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) (u1_struct_0 X1)))))) \Rightarrow (\forall X3. (m1_lattice5 X3 X0 \\ & X1 X2) \Rightarrow ((v1_relat_1 X3) \wedge ((v5_relat_1 X3 (k4_zfmisc_1 X0 X0) (u1_struct_0 X1) (u1_struct_0 X1))) \wedge ((v1_funct_1 X3) \wedge (v5_ordinal1 X3)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.(r2_wellord2\ X0\ X1)\Leftrightarrow(\exists X2.((v1_relat_1\ X2)\wedge(v1_funct_1\ X2))\wedge((v2_funct_1\ X2)\wedge((k9_xtuple_0\ X2 = X0)\wedge(k10_xtuple_0\ X2 = X1)))) \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0\ X0)\Rightarrow(\forall X1.((v3_orders_2\ X1)\wedge \\ ((v4_orders_2\ X1)\wedge((v5_orders_2\ X1)\wedge((v1_lattice3\ X1)\wedge((v2_lattice3 \\ X1)\wedge((v1_yellow_0\ X1)\wedge(l1_orders_2\ X1))))))\Rightarrow(\forall X2.(\\ (v1_funct_1\ X2)\wedge((v1_funct_2\ X2\ (k2_zfmisc_1\ X0\ X0)\ (u1_struct_0 \\ X1))\wedge(m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k2_zfmisc_1 \\ X0\ X0)\ (u1_struct_0\ X1))))))\Rightarrow(\forall X3.((v1_relat_1\ X3)\wedge((\\ v5_relat_1\ X3\ (k4_zfmisc_1\ X0\ X0)\ (u1_struct_0\ X1)\ (u1_struct_0 \\ X1))\wedge((v1_funct_1\ X3)\wedge(v5_ordinal1\ X3))))\Rightarrow((m1_lattice5\ X3 \\ X0\ X1\ X2)\Leftrightarrow((v1_card_1\ (k9_xtuple_0\ X3))\wedge((v2_funct_1\ X3)\wedge(k2_relset_1 \\ (k4_zfmisc_1\ X0\ X0)\ (u1_struct_0\ X1)\ (u1_struct_0\ X1))\ X3 = ReplSep4 \\ (toset\ (\lambda X4 : \iota.m1_subset_1\ X4\ X0))\ (\lambda X4 : \iota.toset\ (\lambda X5 : \\ \iota.m1_subset_1\ X5\ X0))\ (\lambda X4 : \iota.\lambda X5 : \iota.toset\ (\lambda X6 : \\ \iota.m1_subset_1\ X6\ (u1_struct_0\ X1))\ (\lambda X4 : \iota.\lambda X5 : \iota. \\ \lambda X6 : \iota.toset\ (\lambda X7 : \iota.m1_subset_1\ X7\ (u1_struct_0\ X1))) \\ (\lambda X4 : \iota.\lambda X5 : \iota.\lambda X6 : \iota.\lambda X7 : \iota.r3_orders_2 \\ X1\ (k3_lattice5\ X0\ X1\ X2\ X4\ X5)\ (k13_lattice3\ X1\ X6\ X7))\ (\lambda X4 : \iota. \\ \lambda X5 : \iota.\lambda X6 : \iota.\lambda X7 : \iota.k5_domain_1\ X0\ X0\ (u1_struct_0 \\ X1)\ (u1_struct_0\ X1)\ X4\ X5\ X6\ X7)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0\ X0)\Rightarrow(\forall X1.((v3_orders_2\ X1)\wedge \\ ((v4_orders_2\ X1)\wedge((v5_orders_2\ X1)\wedge((v1_lattice3\ X1)\wedge((v2_lattice3 \\ X1)\wedge((v1_yellow_0\ X1)\wedge(l1_orders_2\ X1))))))\Rightarrow(\forall X2.(\\ (v1_funct_1\ X2)\wedge((v1_funct_2\ X2\ (k2_zfmisc_1\ X0\ X0)\ (u1_struct_0 \\ X1))\wedge(m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k2_zfmisc_1 \\ X0\ X0)\ (u1_struct_0\ X1))))))\Rightarrow(\forall X3.(v1_card_1\ X3)\Rightarrow((X3 = \\ k7_lattice5\ X0\ X1\ X2)\Leftrightarrow(r2_tarski\ X3\ (ReplSep4\ (toset\ (\lambda X4 : \iota. \\ m1_subset_1\ X4\ X0))\ (\lambda X4 : \iota.toset\ (\lambda X5 : \iota.m1_subset_1 \\ X5\ X0))\ (\lambda X4 : \iota.\lambda X5 : \iota.toset\ (\lambda X6 : \iota.m1_subset_1 \\ X6\ (u1_struct_0\ X1))\ (\lambda X4 : \iota.\lambda X5 : \iota.\lambda X6 : \iota.toset \\ (\lambda X7 : \iota.m1_subset_1\ X7\ (u1_struct_0\ X1))\ (\lambda X4 : \iota.\lambda X5 : \\ \iota.\lambda X6 : \iota.\lambda X7 : \iota.r3_orders_2\ X1\ (k3_lattice5\ X0\ X1 \\ X2\ X4\ X5)\ (k13_lattice3\ X1\ X6\ X7))\ (\lambda X4 : \iota.\lambda X5 : \iota.\lambda X6 : \\ \iota.\lambda X7 : \iota.k5_domain_1\ X0\ X0\ (u1_struct_0\ X1)\ (u1_struct_0 \\ X1)\ X4\ X5\ X6\ X7)))))) \end{aligned} \quad (6)$$

Theorem 1

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((v3_orders_2 X1) \wedge \\ & ((v4_orders_2 X1) \wedge (v5_orders_2 X1) \wedge ((v1_lattice3 X1) \wedge (v2_lattice3 \\ & X1) \wedge (v1_yellow_0 X1) \wedge (l1_orders_2 X1)))))) \Rightarrow (\forall X2.(\\ & v3_ordinal1 X2) \Rightarrow (\forall X3.((v1_funct_1 X3) \wedge ((v1_funct_2 X3 \\ & (k2_zfmisc_1 X0 X0) (u1_struct_0 X1)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) (u1_struct_0 X1)))))) \Rightarrow (\forall X4. \\ & (m1_lattice5 X4 X0 X1 X3) \Rightarrow ((X2 \in k7_lattice5 X0 X1 X3) \Leftrightarrow (X2 \in k9_xtuple_0 \\ & X4)))))) \end{aligned}$$