

l38_substlat

(TMc2XDo27n9MaojRCnDzQa6DZK5S8rniUJe)

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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 $k5_substlat : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $k5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_finsub_1 : \iota \Rightarrow \iota$ be given. Let $k4_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_substlat : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2_lattices : \iota \Rightarrow \iota$ be given. Let $u1_lattices : \iota \Rightarrow \iota$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v3_lattices : \iota \Rightarrow o$ be given. Let $v4_finsub_1 : \iota \Rightarrow o$ be given. Let $l2_lattices : \iota \Rightarrow o$ be given. Let $l1_lattices : \iota \Rightarrow o$ be given. Let $l3_lattices : \iota \Rightarrow o$ be given. Let $k3_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge \\ & (m1_subset_1 X1 (k1_zfmisc_1 X0)))) \Rightarrow (\forall X2. (m2_subset_1 \\ & X2 X0 X1) \Leftrightarrow (m1_subset_1 X2 X1)) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. (((v1_funct_1 X1) \wedge \\ & ((v1_funct_2 X1 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))))) \wedge ((m1_subset_1 X2 X0) \wedge \\ & (m1_subset_1 X3 X0))) \Rightarrow (k5_binop_1 X0 X1 X2 X3 = k1_binop_1 X1 X2 X3) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (m2_subset_1 X2 (k5_finsub_1 \\ & (k4_partfun1 X0 X1)) (k1_substlat X0 X1)) \Rightarrow (\forall X3. (m2_subset_1 \\ & X3 (k5_finsub_1 (k4_partfun1 X0 X1)) (k1_substlat X0 X1)) \Rightarrow (k1_binop_1 \\ & (u2_lattices (k5_substlat X0 X1)) (k1_binop_1 (u1_lattices (k5_substlat \\ & X0 X1)) X2 X3) X3 = X3)) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.(\neg v2_struct_0 (k5_substlat X0 X1))\wedge(v3_lattices (k5_substlat X0 X1)) \quad (4)$$

Assume the following.

$$\forall X0.(\neg v1_xboole_0 (k5_finsub_1 X0))\wedge(v4_finsub_1 (k5_finsub_1 X0)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.\neg v1_xboole_0 (k1_substlat X0 X1) \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.(l2_lattices X0)\Rightarrow&((v1_funct_1 (u2_lattices X0))\wedge \\ &((v1_funct_2 (u2_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (\\ &u1_struct_0 X0)) (u1_struct_0 X0))\wedge(m1_subset_1 (u2_lattices \\ &X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (\\ &u1_struct_0 X0)) (u1_struct_0 X0)))))) \quad (7) \end{aligned}$$

Assume the following.

$$\begin{aligned} \forall X0.(l1_lattices X0)\Rightarrow&((v1_funct_1 (u1_lattices X0))\wedge \\ &((v1_funct_2 (u1_lattices X0) (k2_zfmisc_1 (u1_struct_0 X0) (\\ &u1_struct_0 X0)) (u1_struct_0 X0))\wedge(m1_subset_1 (u1_lattices \\ &X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (\\ &u1_struct_0 X0)) (u1_struct_0 X0)))))) \quad (8) \end{aligned}$$

Assume the following.

$$\forall X0.(l3_lattices X0)\Rightarrow((l1_lattices X0)\wedge(l2_lattices X0)) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.(v3_lattices (k5_substlat X0 X1))\wedge(l3_lattices (k5_substlat X0 X1)) \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge(l1_lattices \\ X0))\wedge((m1_subset_1 X1 (u1_struct_0 X0))\wedge(m1_subset_1 X2 (u1_struct_0 \\ X0))))\Rightarrow(m1_subset_1 (k2_lattices X0 X1 X2) (u1_struct_0 X0)) \quad (11) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.m1_subset_1 (k1_substlat X0 X1) (k1_zfmisc_1 (k5_finsub_1 (k4_partfun1 X0 X1))) \quad (12)$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((v3_lattices\ X2)\wedge(l3_lattices \\
& X2))\Rightarrow((X2 = k5_substlat\ X0\ X1)\Leftrightarrow((u1_struct_0\ X2 = k1_substlat\ X0 \\
& X1)\wedge(\forall X3.(m2_subset_1\ X3\ (k5_finsub_1\ (k4_partfun1\ X0 \\
& X1))\ (k1_substlat\ X0\ X1))\Rightarrow(\forall X4.(m2_subset_1\ X4\ (k5_finsub_1 \\
& (k4_partfun1\ X0\ X1))\ (k1_substlat\ X0\ X1))\Rightarrow((k1_binop_1\ (u2_lattices \\
& X2)\ X3\ X4 = k3_substlat\ X0\ X1\ (k2_substlat\ X0\ X1\ X3\ X4))\wedge(k1_binop_1 \\
& (u1_lattices\ X2)\ X3\ X4 = k3_substlat\ X0\ X1\ (k4_substlat\ X0\ X1\ X3\ X4))))))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0\ X0)\wedge(l1_lattices\ X0))\Rightarrow(\forall X1. \\
& (m1_subset_1\ X1\ (u1_struct_0\ X0))\Rightarrow(\forall X2.(m1_subset_1\ X2 \\
& (u1_struct_0\ X0))\Rightarrow(k2_lattices\ X0\ X1\ X2 = k5_binop_1\ (u1_struct_0 \\
& X0)\ (u1_lattices\ X0)\ X1\ X2)))
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0\ X0)\wedge(l2_lattices\ X0))\Rightarrow(\forall X1. \\
& (m1_subset_1\ X1\ (u1_struct_0\ X0))\Rightarrow(\forall X2.(m1_subset_1\ X2 \\
& (u1_struct_0\ X0))\Rightarrow(k1_lattices\ X0\ X1\ X2 = k5_binop_1\ (u1_struct_0 \\
& X0)\ (u2_lattices\ X0)\ X1\ X2)))
\end{aligned} \tag{15}$$

Theorem 1

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(m1_subset_1\ X2\ (u1_struct_0 \\
& (k5_substlat\ X0\ X1)))\Rightarrow(\forall X3.(m1_subset_1\ X3\ (u1_struct_0 \\
& (k5_substlat\ X0\ X1)))\Rightarrow(k1_lattices\ (k5_substlat\ X0\ X1)\ (k2_lattices \\
& (k5_substlat\ X0\ X1)\ X2\ X3)\ X3 = X3))
\end{aligned}$$