

l37_substlat

(TMNBHCVG VinydqHtp5rfokuiGBn53msrRY6)

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Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2_lattices : \iota \Rightarrow \iota$ be given. Let $k5_substlat : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_lattices : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_finsub_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v4_finsub_1 : \iota \Rightarrow o$ be given. Let $k4_substlat : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (m1_subset_1 X2 (k5_finsub_1 \\ & (k4_partfun1 X0 X1))) \Rightarrow (\forall X3. (m1_subset_1 X3 (k5_finsub_1 \\ & (k4_partfun1 X0 X1))) \Rightarrow (k3_substlat X0 X1 (k1_finsub_1 (k5_finsub_1 \\ & (k4_partfun1 X0 X1)) (k3_substlat X0 X1 X2) X3) = k3_substlat X0 X1 \\ & (k1_finsub_1 (k5_finsub_1 (k4_partfun1 X0 X1)) X2 X3))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (m2_subset_1 X2 (k5_finsub_1 \\ & (k4_partfun1 X0 X1)) (k1_substlat X0 X1)) \Rightarrow (k3_substlat X0 X1 X2 = \\ & X2) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge \\ & (m1_subset_1 X1 (k1_zfmisc_1 X0)))) \Rightarrow (\forall X2. (m2_subset_1 \\ & X2 X0 X1) \Leftrightarrow (m1_subset_1 X2 X1)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((m1_subset_1 X2 \\ & (k1_substlat X0 X1)) \wedge (m1_subset_1 X3 (k1_substlat X0 X1))) \Rightarrow (k2_substlat \\ & X0 X1 X2 X3 = k2_xboole_0 X2 X3) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v1_xboole_0 X0)\wedge(v4_finsub_1 X0))\wedge((m1_subset_1 X1 X0)\wedge(m1_subset_1 X2 X0)))\Rightarrow(k1_finsub_1 X0 X1 X2 = k2_xboole_0 X1 X2) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (k5_finsub_1 (k4_partfun1 X0 X1)))\Rightarrow(\forall X3.(m1_subset_1 X3 (k5_finsub_1 (k4_partfun1 X0 X1)))\Rightarrow(k3_substlat X0 X1 (k1_finsub_1 (k5_finsub_1 (k4_partfun1 X0 X1)) (k4_substlat X0 X1 X2 X3) X3) = k3_substlat X0 X1 X3)) \quad (6)$$

Assume the following.

$$\forall X0.(\neg v1_xboole_0 (k5_finsub_1 X0))\wedge(v4_finsub_1 (k5_finsub_1 X0)) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\neg v1_xboole_0 (k1_substlat X0 X1) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v1_xboole_0 X0)\wedge((\neg v1_xboole_0 X1)\wedge(m1_subset_1 X1 (k1_zfmisc_1 X0))))\Rightarrow(\forall X2.(m2_subset_1 X2 X0 X1)\Rightarrow(m1_subset_1 X2 X0)) \quad (9)$$

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.

$$\forall X0.v4_finsub_1 (k5_finsub_1 X0) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(((m1_subset_1 X2 (k5_finsub_1 (k4_partfun1 X0 X1)))\wedge(m1_subset_1 X3 (k5_finsub_1 (k4_partfun1 X0 X1))))\Rightarrow(m1_subset_1 (k4_substlat X0 X1 X2 X3) (k5_finsub_1 (k4_partfun1 X0 X1))) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (k5_finsub_1 (k4_partfun1 X0 X1)))\Rightarrow(m2_subset_1 (k3_substlat X0 X1 X2) (k5_finsub_1 (k4_partfun1 X0 X1)) (k1_substlat X0 X1)) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.m1_subset_1 (k1_substlat X0 X1) (k1_zfmisc_1 (k5_finsub_1 (k4_partfun1 X0 X1))) \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v3_lattices X2)\wedge(l3_lattices \\ & X2))\Rightarrow((X2 = k5_substlat X0 X1)\Leftrightarrow((u1_struct_0 X2 = k1_substlat X0 \\ & X1)\wedge(\forall X3.(m2_subset_1 X3 (k5_finsub_1 (k4_partfun1 X0 \\ & X1)) (k1_substlat X0 X1))\Rightarrow(\forall X4.(m2_subset_1 X4 (k5_finsub_1 \\ & (k4_partfun1 X0 X1)) (k1_substlat X0 X1))\Rightarrow((k1_binop_1 (u2_lattices \\ & X2) X3 X4 = k3_substlat X0 X1 (k2_substlat X0 X1 X3 X4))\wedge(k1_binop_1 \\ & (u1_lattices X2) X3 X4 = k3_substlat X0 X1 (k4_substlat X0 X1 X3 X4))))))))) \quad (15) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.k2_xboole_0 X0 X1 = k2_xboole_0 X1 X0 \quad (16)$$

Theorem 1

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