

t6_msualg_5

(TMd23MxQgz4mTAEVvwGRqiBvZYT8ujPsVo)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_msualg_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_msualg_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_pboole : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r8_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_msualg_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge (\\ & (v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \Rightarrow (\\ & \forall X2.((v1_msualg_4 X2 X0 X1) \wedge (m1_msualg_4 X2 X0 X1 X1)) \Rightarrow (\\ & \forall X3.((v1_msualg_4 X3 X0 X1) \wedge (m1_msualg_4 X3 X0 X1 X1)) \Rightarrow (\\ & \forall X4.((v1_msualg_4 X4 X0 X1) \wedge (m1_msualg_4 X4 X0 X1 X1)) \Rightarrow (\\ & (r2_pboole X0 (k2_pboole X0 X2 X3) X4) \Rightarrow (r2_pboole X0 (k4_msualg_5 \\ & X0 X1 X2 X3) X4)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge (\\ & (v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \Rightarrow (\\ & \forall X2.((v1_msualg_4 X2 X0 X1) \wedge (m1_msualg_4 X2 X0 X1 X1)) \Rightarrow (\\ & \forall X3.((v1_msualg_4 X3 X0 X1) \wedge (m1_msualg_4 X3 X0 X1 X1)) \Rightarrow (\\ & r2_pboole X0 (k2_pboole X0 X2 X3) (k4_msualg_5 X0 X1 X2 X3)))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X0) \wedge (((v1_relat_1 \\ & X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge \\ & ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 \\ & X2 X0)))))) \Rightarrow ((r8_pboole X0 X1 X2) \Leftrightarrow (X1 = X2)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\ & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\ & ((r2_pboole X0 X1 X2) \wedge (r2_pboole X0 X2 X1)) \Rightarrow (X1 = X2)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\ & (\forall X3. (m1_msualg_4 X3 X0 X1 X2) \Rightarrow ((v1_relat_1 X3) \wedge ((v4_relat_1 \\ & X3 X0) \wedge ((v1_funct_1 X3) \wedge (v1_partfun1 X3 X0)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((\neg v1_xboole_0 X0) \wedge \\ & (((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 \\ & X1 X0)))) \wedge (((v1_msualg_4 X2 X0 X1) \wedge (m1_msualg_4 X2 X0 X1 X1)) \wedge \\ & (v1_msualg_4 X3 X0 X1) \wedge (m1_msualg_4 X3 X0 X1 X1)))) \Rightarrow ((v1_msualg_4 \\ & (k4_msualg_5 X0 X1 X2 X3) X0 X1) \wedge (m1_msualg_4 (k4_msualg_5 X0 X1 \\ & X2 X3) X0 X1 X1)) \end{aligned} \quad (6)$$

Theorem 1

$$\begin{aligned} & \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge \\ & (v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\\ & \forall X2. ((v1_msualg_4 X2 X0 X1) \wedge (m1_msualg_4 X2 X0 X1 X1)) \Rightarrow (\\ & \forall X3. ((v1_msualg_4 X3 X0 X1) \wedge (m1_msualg_4 X3 X0 X1 X1)) \Rightarrow (\\ & \forall X4. ((v1_msualg_4 X4 X0 X1) \wedge (m1_msualg_4 X4 X0 X1 X1)) \Rightarrow (\\ & ((r2_pboole X0 (k2_pboole X0 X2 X3) X4) \wedge (\forall X5. ((v1_msualg_4 \\ & X5 X0 X1) \wedge (m1_msualg_4 X5 X0 X1 X1)) \Rightarrow ((r2_pboole X0 (k2_pboole X0 \\ & X2 X3) X5) \Rightarrow (r2_pboole X0 X4 X5)))) \Rightarrow (r8_pboole X0 X4 (k4_msualg_5 \\ & X0 X1 X2 X3)))))) \end{aligned}$$