

t7_msualg_5
(TMNFHfiricMHjsiC9iKvf2NuDWGsDfQ51PV)

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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 $r8_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_msualg_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_pboole : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge \\ & (v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \Rightarrow (\\ & \forall X2.((v1_msualg_4 X2 X0 X1) \wedge (m1_msualg_4 X2 X0 X1 X1)) \Rightarrow (\\ & \forall X3.((v1_msualg_4 X3 X0 X1) \wedge (m1_msualg_4 X3 X0 X1 X1)) \Rightarrow (\\ & \forall X4.((v1_msualg_4 X4 X0 X1) \wedge (m1_msualg_4 X4 X0 X1 X1)) \Rightarrow (\\ & ((r2_pboole X0 (k2_pboole X0 X2 X3) X4) \wedge (\forall X5.((v1_msualg_4 \\ & X5 X0 X1) \wedge (m1_msualg_4 X5 X0 X1 X1)) \Rightarrow ((r2_pboole X0 (k2_pboole X0 \\ & X2 X3) X5) \Rightarrow (r2_pboole X0 X4 X5)))))) \Rightarrow (r8_pboole X0 X4 (k4_msualg_5 \\ & X0 X1 X2 X3)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X0) \wedge (((v1_relat_1 \\ & X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge \\ & ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 \\ & X2 X0)))))) \Rightarrow ((r8_pboole X0 X1 X2) \Rightarrow (r8_pboole X0 X2 X1)) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\ & (r2_pboole X0 X1 X1) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1_relat_1 X1)\wedge((v4_relat_1 \\ & X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\wedge((v1_relat_1 \\ & X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge(v1_partfun1 X2 X0))))))\Rightarrow \\ & (k2_pboole X0 X1 X1 = X1) \end{aligned} \tag{4}$$

Assume the following.

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

Assume the following.

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

Theorem 1

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