

t12_closure3 (TMGDpcwZvTX- ishh57opVHoHwViCVDvNovBm)

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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 $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k1_closure2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_closure3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_closure3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m3_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\
 & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1_relat_1 \\
 & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\
 & (\forall X3. ((v1_relat_1 X3) \wedge ((v4_relat_1 X3 X0) \wedge ((v1_funct_1 \\
 & X3) \wedge (v1_partfun1 X3 X0)))) \Rightarrow ((r2_pboole X0 X1 X2) \wedge (r2_pboole \\
 & X0 X1 X3)) \Rightarrow (r2_pboole X0 X1 (k3_pboole X0 X2 X3))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\
 & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. (m1_subset_1 \\
 & X2 (k1_zfmisc_1 (k1_closure2 X0 X1))) \Rightarrow (\forall X3. (m1_subset_1 \\
 & X3 (k1_zfmisc_1 (k1_closure2 X0 X1))) \Rightarrow ((r1_tarski X2 X3) \Rightarrow (r2_pboole \\
 & X0 (k2_closure3 X0 X1 X2) (k2_closure3 X0 X1 X3))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. \forall X2. \forall X3. (((v1_relat_1 X1) \wedge \\
 & ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge \\
 & ((m1_subset_1 X2 (k1_zfmisc_1 (k1_closure2 X0 X1))) \wedge (m1_subset_1 \\
 & X3 (k1_zfmisc_1 (k1_closure2 X0 X1)))))) \Rightarrow (k4_closure3 X0 X1 X2 X3 = \\
 & k3_xboole_0 X2 X3)
 \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge \\ (v1_funct_1 X1)\wedge(v1_partfun1 X1 X0)))\Rightarrow(\forall X2.(m3_pboole \\ X2 X0 X1)\Rightarrow((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge \\ (v1_partfun1 X2 X0)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.(((v1_relat_1 X1)\wedge \\ ((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\wedge \\ ((m1_subset_1 X2 (k1_zfmisc_1 (k1_closure2 X0 X1)))\wedge(m1_subset_1 \\ X3 (k1_zfmisc_1 (k1_closure2 X0 X1))))\Rightarrow(m1_subset_1 (k4_closure3 \\ X0 X1 X2 X3) (k1_zfmisc_1 (k1_closure2 X0 X1)))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((v1_relat_1 X1)\wedge((v4_relat_1 \\ X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\wedge(m1_subset_1 \\ X2 (k1_zfmisc_1 (k1_closure2 X0 X1))))\Rightarrow(m3_pboole (k2_closure3 \\ X0 X1 X2) X0 X1) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(X2 = k3_xboole_0 X0 X1)\Leftrightarrow(\forall X3. \\ (X3 \in X2)\Leftrightarrow((X3 \in X0)\wedge(X3 \in X1))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(r1_tarski X0 X1)\Leftrightarrow(\forall X2.(X2 \in X0)\Rightarrow \\ (X2 \in X1)) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.k3_xboole_0 X0 X1 = k3_xboole_0 X1 X0 \quad (9)$$

Theorem 1

$$\begin{aligned} \forall X0.\forall X1.(((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge \\ (v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\Rightarrow(\forall X2.(m1_subset_1 \\ X2 (k1_zfmisc_1 (k1_closure2 X0 X1)))\Rightarrow(\forall X3.(m1_subset_1 \\ X3 (k1_zfmisc_1 (k1_closure2 X0 X1)))\Rightarrow(r2_pboole X0 (k2_closure3 \\ X0 X1 (k4_closure3 X0 X1 X2 X3)) (k3_pboole X0 (k2_closure3 X0 X1 X2) \\ (k2_closure3 X0 X1 X3)))))) \end{aligned}$$