

t30_closure2 (TMX- naaE8NnQtWuMazSUvavmpDgRzh2qS39Y)

October 27, 2020

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 $m1_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_closure2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6_closure2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r6_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v7_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7_closure2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k1_closure2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v4_funct_1 : \iota \Rightarrow o$ be given. Let $v2_card_3 : \iota \Rightarrow o$ be given. Let $m3_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\ & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\ & (((r2_pboole X0 X1 X2) \wedge (r2_pboole X0 X2 X1)) \Rightarrow (r6_pboole X0 X1 X2))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\ & ((r6_pboole X0 X1 X2) \Leftrightarrow (X1 = X2)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((\neg v1_xboole_0 \\ & X2) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k1_closure2 X0 X1)))) \Rightarrow (\forall X3. \\ & (m1_closure2 X3 X0 X1 X2) \Leftrightarrow (m1_subset_1 X3 X2)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\ & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (k6_closure2 X0 X1 = k1_closure2 \\ & X0 X1) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge(v1_partfun1 X1 X0)))\Rightarrow(k2_closure2 X0 X1 = k1_closure2 X0 X1) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge(v1_partfun1 X1 X0)))\Rightarrow((\neg v1_xboole_0 (k1_closure2 X0 X1))\wedge((v4_funct_1 (k1_closure2 X0 X1))\wedge(v2_card_3 (k1_closure2 X0 X1)))) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge(v1_partfun1 X1 X0)))\Rightarrow(\forall X2.(m3_pboole X2 X0 X1)\Rightarrow((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge(v1_partfun1 X2 X0)))))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\wedge((\neg v1_xboole_0 X2)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k1_closure2 X0 X1))))))\Rightarrow(\forall X3.(m1_closure2 X3 X0 X1 X2)\Rightarrow(m3_pboole X3 X0 X1)) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\wedge(((v1_funct_1 X2)\wedge((v1_funct_2 X2 (k6_closure2 X0 X1) (k6_closure2 X0 X1))\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k6_closure2 X0 X1) (k6_closure2 X0 X1))))))\wedge(m1_subset_1 X3 (k6_closure2 X0 X1))))))\Rightarrow(m1_closure2 (k7_closure2 X0 X1 X2 X3) X0 X1 (k6_closure2 X0 X1)) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge(v1_partfun1 X1 X0)))\Rightarrow(m1_subset_1 (k2_closure2 X0 X1) (k1_zfmisc_1 (k1_closure2 X0 X1))) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(v1_funct_1 X1)\wedge(v1_partfun1 X1 X0)))\Rightarrow(\forall X2.((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge(v1_partfun1 X2 X0))))\Rightarrow((m3_pboole X2 X0 X1)\Leftrightarrow(r2_pboole X0 X2 X1))) \quad (11)$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge \\
& (v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1_funct_1 \\
& X2)\wedge((v1_funct_2 X2 (k6_closure2 X0 X1) (k6_closure2 X0 X1))\wedge(\\
& m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k6_closure2 X0 X1) (\\
& k6_closure2 X0 X1))))))\Rightarrow((v7_closure2 X2 X0 X1)\Leftrightarrow(\forall X3.(\\
& m1_closure2 X3 X0 X1 (k6_closure2 X0 X1))\Rightarrow(r2_pboole X0 X3 (k7_closure2 \\
& X0 X1 X2 X3))))))
\end{aligned} \tag{12}$$

Theorem 1

$$\begin{aligned}
& \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(\\
& (v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\Rightarrow(\forall X2.(m1_closure2 \\
& X2 X0 X1 (k2_closure2 X0 X1))\Rightarrow(\forall X3.((v1_funct_1 X3)\wedge((v1_funct_2 \\
& X3 (k6_closure2 X0 X1) (k6_closure2 X0 X1))\wedge(m1_subset_1 X3 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (k6_closure2 X0 X1) (k6_closure2 X0 X1))))))\Rightarrow(((\\
& r6_pboole X0 X2 X1)\wedge(v7_closure2 X3 X0 X1))\Rightarrow(r6_pboole X0 X2 (k7_closure2 \\
& X0 X1 X3 X2))))))
\end{aligned}$$