

t10_pencil_3 (TMdTtUG- bKh5onHAyo5UamCiKpt8WEr3mNh5)

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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 $v11_pencil_1 : \iota \Rightarrow o$ be given. Let $v14_pencil_1 : \iota \Rightarrow o$ be given. Let $v13_pencil_1 : \iota \Rightarrow o$ be given. Let $v16_pencil_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m3_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k12_pralg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_pencil_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_card_3 : \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_pencil_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_pencil_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_relat_1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k5_pencil_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_pralg_1 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((v1_relat_1 X0) \wedge ((v2_relat_1 X0) \wedge (v1_funct_1 X0))) \Rightarrow \\ & (\forall X1.((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge (v1_funct_1 X1))) \Rightarrow \quad (1) \\ & ((k4_card_3 X0 = k4_card_3 X1) \Rightarrow (X0 = X1))) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\ & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. (m3_pboole \\ & X2 X0 X1) \Rightarrow ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge \\ & (v1_partfun1 X2 X0)))))) \quad (2) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X1) \wedge \\ & (v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge ((v11_pencil_1 \\ & X1) \wedge (v14_pencil_1 X1)))))) \Rightarrow (\forall X2. (m1_pencil_2 X2 X0 X1) \Rightarrow \\ & (m1_subset_1 X2 (k1_zfmisc_1 (u1_struct_0 (k5_pencil_1 X0 X1)))))) \quad (3) \end{aligned}$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\ (v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge (v2_pralg_1 X1)))) \Rightarrow ((\\ v1_relat_1 (k12_pralg_1 X0 X1)) \wedge ((v4_relat_1 (k12_pralg_1 X0 \\ X1) X0) \wedge ((v1_funct_1 (k12_pralg_1 X0 X1)) \wedge (v1_partfun1 (k12_pralg_1 \\ X0 X1) X0)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge (\\ v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge ((v11_pencil_1 \\ X1) \wedge (v14_pencil_1 X1)))))) \Rightarrow (\forall X2. (m1_subset_1 X2 (k1_zfmisc_1 \\ u1_struct_0 (k5_pencil_1 X0 X1))) \Rightarrow ((m1_pencil_2 X2 X0 X1) \Leftrightarrow (\\ \exists X3. ((\neg v13_pencil_1 X3) \wedge ((v16_pencil_1 X3 X0) \wedge (m3_pboole \\ X3 X0 (k12_pralg_1 X0 X1)))) \wedge ((X2 = k4_card_3 X3) \wedge (k1_funct_1 X3 \\ (k3_pencil_1 X0 X3) = k2_struct_0 (k1_pencil_1 X0 X1 (k3_pencil_1 \\ X0 X3))))))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge (\\ v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge ((\neg \\ v13_pencil_1 X1) \wedge (v16_pencil_1 X1 X0)))))) \Rightarrow ((v1_relat_1 X1) \wedge \\ ((v2_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 \\ X1 X0)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0. ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge (v11_pencil_1 \\ X0))) \Rightarrow ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge (v2_pralg_1 X0))) \quad (7)$$

Theorem 1

$$\begin{aligned} \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge (\\ v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge ((v11_pencil_1 \\ X1) \wedge (v14_pencil_1 X1)))))) \Rightarrow (\forall X2. ((\neg v13_pencil_1 X2) \wedge \\ ((v16_pencil_1 X2 X0) \wedge (m3_pboole X2 X0 (k12_pralg_1 X0 X1)))) \Rightarrow \\ ((m1_pencil_2 (k4_card_3 X2) X0 X1) \Rightarrow (k1_funct_1 X2 (k3_pencil_1 \\ X0 X2) = k2_struct_0 (k1_pencil_1 X0 X1 (k3_pencil_1 X0 X2)))))) \end{aligned}$$