

t31_pzfmisc1
(TMMffLnTfb7LBCck1BUXZ5z55pJPynSQ7jn)

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 $r6_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_mboolean : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_pzfmisc1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_pzfmisc1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (r6_pboole X0 (k2_mboolean X0 (k1_pzfmisc1 X0 X1)) X1) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow (r6_pboole X0 (k2_mboolean X0 (k2_pboole X0 X1 X2)) (k2_pboole X0 (k2_mboolean X0 X1) (k2_mboolean X0 X2)))) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow (r6_pboole X0 (k2_pboole X0 (k1_pzfmisc1 X0 X1) (k1_pzfmisc1 X0 X2)) (k2_pzfmisc1 X0 X1 X2))) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))))) \Rightarrow ((r6_pboole X0 X1 X2) \Leftrightarrow (X1 = X2)) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))))) \Rightarrow \\ & ((v1_relat_1 (k2_pzfmisc1 X0 X1 X2)) \wedge ((v4_relat_1 (k2_pzfmisc1 \\ & X0 X1 X2) X0) \wedge ((v1_funct_1 (k2_pzfmisc1 X0 X1 X2)) \wedge (v1_partfun1 \\ & (k2_pzfmisc1 X0 X1 X2) X0)))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))))) \Rightarrow \\ & ((v1_relat_1 (k2_pboole X0 X1 X2)) \wedge ((v4_relat_1 (k2_pboole X0 \\ & X1 X2) X0) \wedge ((v1_funct_1 (k2_pboole X0 X1 X2)) \wedge (v1_partfun1 (k2_pboole \\ & X0 X1 X2) X0)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge (\\ & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \Rightarrow ((v1_relat_1 (k2_mboolean \\ & X0 X1)) \wedge ((v4_relat_1 (k2_mboolean X0 X1) X0) \wedge ((v1_funct_1 (k2_mboolean \\ & X0 X1)) \wedge (v1_partfun1 (k2_mboolean X0 X1) X0)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge (\\ & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \Rightarrow ((v1_relat_1 (k1_pzfmisc1 \\ & X0 X1)) \wedge ((v4_relat_1 (k1_pzfmisc1 X0 X1) X0) \wedge ((v1_funct_1 (k1_pzfmisc1 \\ & X0 X1)) \wedge (v1_partfun1 (k1_pzfmisc1 X0 X1) X0)))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))))) \Rightarrow \\ & (k2_pboole X0 X1 X2 = k2_pboole X0 X2 X1) \end{aligned} \quad (9)$$

Theorem 1

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge (\\ & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \Rightarrow (\forall X2. ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))))) \Rightarrow \\ & (r6_pboole X0 (k2_mboolean X0 (k2_pzfmisc1 X0 (k1_pzfmisc1 X0 X1) \\ & (k1_pzfmisc1 X0 X2))) (k2_pzfmisc1 X0 X1 X2)) \end{aligned}$$