

t42_pre_poly
(TMZGiUwq5cSvHSBsz6wSnNUk5Uqpf3uC12T)

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Let $v3_ordinal1 : \iota \Rightarrow o$ 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 $v4_valued_0 : \iota \Rightarrow o$ be given. Let $v2_pre_poly : \iota \Rightarrow o$ be given. Let $r2_pre_poly : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_pre_poly : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r6_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.(v3_ordinal1 X0) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((\\ & v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge ((v4_valued_0 \\ & X1) \wedge (v2_pre_poly X1)))))) \Rightarrow (\forall X2.((v1_relat_1 X2) \wedge ((v4_relat_1 \\ & X2 X0) \wedge ((v1_funct_1 X2) \wedge ((v1_partfun1 X2 X0) \wedge ((v4_valued_0 X2) \wedge \\ & (v2_pre_poly X2)))))) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge ((v4_relat_1 \\ & X3 X0) \wedge ((v1_funct_1 X3) \wedge ((v1_partfun1 X3 X0) \wedge ((v4_valued_0 X3) \wedge \\ & (v2_pre_poly X3)))))) \Rightarrow (((r1_pre_poly X0 X1 X2) \wedge (r1_pre_poly \\ & X0 X2 X3)) \Rightarrow (r1_pre_poly X0 X1 X3)))) \end{aligned} \tag{1}$$

Assume the following.

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

Assume the following.

$$\begin{aligned} & \forall X0.(v3_ordinal1 X0) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((\\ & v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge ((v4_valued_0 \\ & X1) \wedge (v2_pre_poly X1)))))) \Rightarrow (\forall X2.((v1_relat_1 X2) \wedge ((v4_relat_1 \\ & X2 X0) \wedge ((v1_funct_1 X2) \wedge ((v1_partfun1 X2 X0) \wedge ((v4_valued_0 X2) \wedge \\ & (v2_pre_poly X2)))))) \Rightarrow ((r2_pre_poly X0 X1 X2) \Leftrightarrow ((r1_pre_poly \\ & X0 X1 X2) \vee (r6_pboole X0 X1 X2)))) \end{aligned} \tag{3}$$

Theorem 1

$$\begin{aligned} & \forall X0.(v3_ordinal1\ X0) \Rightarrow (\forall X1.((v1_relat_1\ X1) \wedge ((\\ & v4_relat_1\ X1\ X0) \wedge ((v1_funct_1\ X1) \wedge ((v1_partfun1\ X1\ X0) \wedge ((v4_valued_0 \\ & X1) \wedge (v2_pre_poly\ X1)))))) \Rightarrow (\forall X2.((v1_relat_1\ X2) \wedge ((v4_relat_1 \\ & X2\ X0) \wedge ((v1_funct_1\ X2) \wedge ((v1_partfun1\ X2\ X0) \wedge ((v4_valued_0\ X2) \wedge \\ & (v2_pre_poly\ X2)))))) \Rightarrow (\forall X3.((v1_relat_1\ X3) \wedge ((v4_relat_1 \\ & X3\ X0) \wedge ((v1_funct_1\ X3) \wedge ((v1_partfun1\ X3\ X0) \wedge ((v4_valued_0\ X3) \wedge \\ & (v2_pre_poly\ X3)))))) \Rightarrow (((r2_pre_poly\ X0\ X1\ X2) \wedge (r2_pre_poly \\ & X0\ X2\ X3)) \Rightarrow (r2_pre_poly\ X0\ X1\ X3)))) \end{aligned}$$