

# t43\_pre\_poly

## (TMYg583Wiai4TvzAof6fANhgun1Ep1EL2zU)

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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  $r1\_pre\_poly : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_pre\_poly : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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**

$$\begin{aligned} & \forall X0.(v3\_ordinal1\ X0) \Rightarrow (\forall X1.((v1\_relat\_1\ X1) \wedge (( \\ & v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge ((v1\_partfun1\ X1\ X0) \wedge ((v4\_valued\_0 \\ & X1) \wedge (v2\_pre\_poly\ X1)))))) \Rightarrow (\forall X2.((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1 \\ & X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge ((v1\_partfun1\ X2\ X0) \wedge ((v4\_valued\_0\ X2) \wedge \\ & (v2\_pre\_poly\ X2)))))) \Rightarrow (\forall X3.((v1\_relat\_1\ X3) \wedge ((v4\_relat\_1 \\ & X3\ X0) \wedge ((v1\_funct\_1\ X3) \wedge ((v1\_partfun1\ X3\ X0) \wedge ((v4\_valued\_0\ X3) \wedge \\ & (v2\_pre\_poly\ X3)))))) \Rightarrow (((r1\_pre\_poly\ X0\ X1\ X2) \wedge (r2\_pre\_poly \\ & X0\ X2\ X3)) \Rightarrow (r1\_pre\_poly\ X0\ X1\ X3)))) \end{aligned}$$