

## l15\_termord

(TMZ78utodVNaSdXnN5cWkNVDZEkmkNtdeaH)

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Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k15\_pre\_poly : \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v6\_relat\_2 : \iota \Rightarrow o$  be given. Let  $v8\_relat\_2 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  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  $v4\_valued\_0 : \iota \Rightarrow o$  be given. Let  $v2\_pre\_poly : \iota \Rightarrow o$  be given. Let  $r1\_termord : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_termord : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.(v3\_ordinal1 X0) \Rightarrow (\forall X1.((v1\_partfun1 X1 (k15\_pre\_poly \\
 & \quad X0)) \wedge ((v1\_relat\_2 X1) \wedge ((v4\_relat\_2 X1) \wedge ((v6\_relat\_2 X1) \wedge (( \\
 & \quad v8\_relat\_2 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k15\_pre\_poly \\
 & \quad X0) (k15\_pre\_poly X0)))))))))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge \\
 & \quad ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_partfun1 X2 X0) \wedge (( \\
 & \quad v4\_valued\_0 X2) \wedge (v2\_pre\_poly X2)))))) \Rightarrow (\forall X3.((v1\_relat\_1 \\
 & \quad X3) \wedge ((v4\_relat\_1 X3 X0) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_partfun1 X3 X0) \wedge \\
 & \quad ((v4\_valued\_0 X3) \wedge (v2\_pre\_poly X3)))))) \Rightarrow ((r1\_termord X0 X1 X2 \\
 & \quad X3) \Leftrightarrow (\neg r2\_termord X0 X1 X3 X2))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.(v3\_ordinal1 X0) \Rightarrow (\forall X1.((v1\_partfun1 X1 (k15\_pre\_poly \\
 & \quad X0)) \wedge ((v1\_relat\_2 X1) \wedge ((v4\_relat\_2 X1) \wedge ((v8\_relat\_2 X1) \wedge (m1\_subset\_1 \\
 & \quad X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k15\_pre\_poly X0) (k15\_pre\_poly \\
 & \quad X0)))))))))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 X0) \wedge \\
 & \quad ((v1\_funct\_1 X2) \wedge ((v1\_partfun1 X2 X0) \wedge ((v4\_valued\_0 X2) \wedge (v2\_pre\_poly \\
 & \quad X2)))))) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 X0) \wedge ( \\
 & \quad (v1\_funct\_1 X3) \wedge ((v1\_partfun1 X3 X0) \wedge ((v4\_valued\_0 X3) \wedge (v2\_pre\_poly \\
 & \quad X3)))))) \Rightarrow ((r2\_termord X0 X1 X2 X3) \Leftrightarrow ((r1\_termord X0 X1 X2 X3) \wedge (X2 \neq \\
 & \quad X3))))))
 \end{aligned} \tag{2}$$

**Theorem 1**

$$\begin{aligned} \forall X0.(v3\_ordinal1\ X0) \Rightarrow (\forall X1.((v1\_partfun1\ X1\ (k15\_pre\_poly \\ X0)) \wedge ((v1\_relat\_2\ X1) \wedge ((v4\_relat\_2\ X1) \wedge ((v6\_relat\_2\ X1) \wedge (( \\ v8\_relat\_2\ X1) \wedge (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k15\_pre\_poly \\ X0)\ (k15\_pre\_poly\ X0)))))))))) \Rightarrow (\forall X2.((v1\_relat\_1\ X2) \wedge \\ ((v4\_relat\_1\ X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge ((v1\_partfun1\ X2\ X0) \wedge (( \\ v4\_valued\_0\ X2) \wedge (v2\_pre\_poly\ X2)))))) \Rightarrow (\forall X3.((v1\_relat\_1 \\ X3) \wedge ((v4\_relat\_1\ X3\ X0) \wedge ((v1\_funct\_1\ X3) \wedge ((v1\_partfun1\ X3\ X0) \wedge \\ ((v4\_valued\_0\ X3) \wedge (v2\_pre\_poly\ X3)))))) \Rightarrow ((r1\_termord\ X0\ X1\ X2 \\ X3) \vee (r1\_termord\ X0\ X1\ X3\ X2)))))) \end{aligned}$$