

## t43\_ordinal3

(TMXV81D36Va431Q8xJq5PHnPmFoWXsNW84W)

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Let  $v5\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_ordinal2 : \iota \Rightarrow o$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_ordinal2 : \iota \Rightarrow \iota$  be given. Let  $k1\_ordinal3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_ordinal2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((v5\_ordinal1 X0) \wedge ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 \\
 & X0) \wedge (v1\_ordinal2 X0)))) \Rightarrow (\forall X1.((v5\_ordinal1 X1) \wedge ((v1\_relat\_1 \\
 & X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_ordinal2 X1)))) \Rightarrow (\forall X2.(v3\_ordinal1 \\
 & X2) \Rightarrow (((k9\_xtuple\_0 X0 = k9\_xtuple\_0 X1) \wedge (\forall X3.(v3\_ordinal1 \\
 & X3) \Rightarrow (\forall X4.(v3\_ordinal1 X4) \Rightarrow (((X3 \in k9\_xtuple\_0 X0) \wedge (X4 = \\
 & k1\_funct\_1 X0 X3)) \Rightarrow (k1\_funct\_1 X1 X3 = k10\_ordinal2 X2 X4)))))) \Rightarrow \\
 & ((k1\_xboole\_0 = k9\_xtuple\_0 X0) \vee (k4\_ordinal2 X1 = k10\_ordinal2 \\
 & X2 (k4\_ordinal2 X0))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((v3\_ordinal1 X0) \wedge ((v5\_ordinal1 X1) \wedge ( \\
 & (v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_ordinal2 X1)))) \Rightarrow ((v5\_ordinal1 \\
 & (k1\_ordinal3 X0 X1)) \wedge ((v1\_relat\_1 (k1\_ordinal3 X0 X1)) \wedge ((v1\_funct\_1 \\
 & (k1\_ordinal3 X0 X1)) \wedge (v1\_ordinal2 (k1\_ordinal3 X0 X1))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.(v3\_ordinal1 X0) \Rightarrow (\forall X1.((v5\_ordinal1 X1) \wedge ( \\
 & (v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_ordinal2 X1)))) \Rightarrow (\forall X2. \\
 & ((v5\_ordinal1 X2) \wedge ((v1\_relat\_1 X2) \wedge ((v1\_funct\_1 X2) \wedge (v1\_ordinal2 \\
 & X2)))) \Rightarrow ((X2 = k1\_ordinal3 X0 X1) \Leftrightarrow ((k9\_xtuple\_0 X2 = k9\_xtuple\_0 \\
 & X1) \wedge (\forall X3.(v3\_ordinal1 X3) \Rightarrow ((X3 \in k9\_xtuple\_0 X1) \Rightarrow (k1\_funct\_1 \\
 & X2 X3 = k10\_ordinal2 X0 (k1\_funct\_1 X1 X3)))))))))
 \end{aligned} \tag{3}$$

**Theorem 1**

$$\begin{aligned} \forall X0.((v5\_ordinal1\ X0) \wedge ((v1\_relat\_1\ X0) \wedge ((v1\_funct\_1 \\ X0) \wedge (v1\_ordinal2\ X0)))) \Rightarrow (\forall X1.(v3\_ordinal1\ X1) \Rightarrow ((k1\_xboole\_0 \neq \\ k9\_xtuple\_0\ X0) \Rightarrow (k4\_ordinal2\ (k1\_ordinal3\ X1\ X0) = k10\_ordinal2 \\ X1\ (k4\_ordinal2\ X0)))) \end{aligned}$$