

## t21\_ordinal4

(TMYzt4kMqqsfrR4gVYS13vTdgwFKzzXuut6V)

October 27, 2020

Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v4\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v5\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_ordinal2 : \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k12\_ordinal2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_ordinal2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k8\_ordinal2 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} \forall X0.(v3\_ordinal1 X0) \Rightarrow (\forall X1.(v3\_ordinal1 X1) \Rightarrow (( \\ v4\_ordinal1 X0) \Rightarrow ((X0 = k1\_xboole\_0) \vee (\forall X2.((v5\_ordinal1 \\ X2) \wedge ((v1\_relat\_1 X2) \wedge ((v1\_funct\_1 X2) \wedge (v1\_ordinal2 X2)))) \Rightarrow \\ (((k9\_xtuple\_0 X2 = X0) \wedge (\forall X3.(v3\_ordinal1 X3) \Rightarrow ((X3 \in X0) \Rightarrow \\ (k1\_funct\_1 X2 X3 = k12\_ordinal2 X1 X3)))) \Rightarrow (k12\_ordinal2 X1 X0 = \\ k8\_ordinal2 X2)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(( \\ v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow (((k9\_xtuple\_0 X0 = k9\_xtuple\_0 \\ X1) \wedge (\forall X2.(X2 \in k9\_xtuple\_0 X0) \Rightarrow (k1\_funct\_1 X0 X2 = k1\_funct\_1 \\ X1 X2))) \Rightarrow (X0 = X1))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \tag{3}$$

Assume the following.

$$\begin{aligned} \forall X0.(v3\_ordinal1 X0) \Rightarrow (\forall X1.(v3\_ordinal1 X1) \Rightarrow (\neg \\ (X1 \neq k1\_xboole\_0) \wedge ((v4\_ordinal1 X1) \wedge (\forall X2.((v1\_relat\_1 \\ X2) \wedge ((v5\_ordinal1 X2) \wedge ((v1\_funct\_1 X2) \wedge (v1\_ordinal2 X2)))) \Rightarrow \\ (\neg (k9\_xtuple\_0 X2 = X1) \wedge ((\forall X3.(v3\_ordinal1 X3) \Rightarrow ((X3 \in X1) \Rightarrow \\ (k1\_funct\_1 X2 X3 = k12\_ordinal2 X0 X3)))) \wedge (\exists X3.(v3\_ordinal1 \\ X3) \wedge (r1\_ordinal2 X3 X2)))))))))) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} \forall X0.((v5\_ordinal1\ X0)\wedge((v1\_relat\_1\ X0)\wedge((v1\_funct\_1 \\ X0)\wedge(v1\_ordinal2\ X0))))\Rightarrow((\exists X1.(v3\_ordinal1\ X1)\wedge(r1\_ordinal2 \\ X1\ X0))\Rightarrow(\forall X1.(v3\_ordinal1\ X1)\Rightarrow((X1 = k8\_ordinal2\ X0)\Leftrightarrow( \\ r1\_ordinal2\ X1\ X0)))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.(v3\_ordinal1\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ X0)\Rightarrow (v3\_ordinal1\ X1)) \quad (6)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(v3\_ordinal1\ X0)\Rightarrow(\forall X1.(v3\_ordinal1\ X1)\Rightarrow(( \\ v4\_ordinal1\ X0)\Rightarrow((X0 = k1\_xboole\_0)\vee(\forall X2.((v1\_relat\_1 \\ X2)\wedge((v5\_ordinal1\ X2)\wedge((v1\_funct\_1\ X2)\wedge(v1\_ordinal2\ X2))))\Rightarrow \\ (((k9\_xtuple\_0\ X2 = X0)\wedge(\forall X3.(v3\_ordinal1\ X3)\Rightarrow((X3 \in X0)\Rightarrow \\ (k1\_funct\_1\ X2\ X3 = k12\_ordinal2\ X1\ X3))))\Rightarrow(r1\_ordinal2\ (k12\_ordinal2 \\ X1\ X0)\ X2)))))) \end{aligned}$$