

## t36\_ordinal2

(TMFVtUvj1u4HeBt5ef37UWghsPvPpnEAXLj)

October 27, 2020

Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k11\_ordinal2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_ordinal1 : \iota \Rightarrow \iota$  be given. Let  $k10\_ordinal2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. 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  $k1\_ordinal2 : \iota \Rightarrow \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v4\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_tarski : \iota \Rightarrow \iota$  be given. Let  $k4\_ordinal2 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0 : \iota \Rightarrow \iota. \forall X1 : \iota \Rightarrow \iota \Rightarrow \iota. \forall X2 : \iota \Rightarrow \iota \Rightarrow \\
 & \quad \iota. \forall X3. ((v3\_ordinal1 X3) \wedge ((\forall X4. \forall X5. v3\_ordinal1 (X1 X4 X5)) \wedge (\forall X4. \\
 & \quad (X2 X4 X5)) \wedge ((\forall X4. \forall X5. v3\_ordinal1 (X1 X4 X5)) \wedge (\forall X4. \\
 & \quad v3\_ordinal1 (X0 X4)))))) \Rightarrow ((\forall X4. (v3\_ordinal1 X4) \Rightarrow (\forall X5. \\
 & \quad (v3\_ordinal1 X5) \Rightarrow ((X5 = X0 X4) \Leftrightarrow (\exists X6. ((v5\_ordinal1 X6) \wedge \\
 & \quad ((v1\_relat\_1 X6) \wedge ((v1\_funct\_1 X6) \wedge (v1\_ordinal2 X6)))))) \wedge ((X5 = \\
 & \quad k1\_ordinal2 X6) \wedge ((k9\_xtuple\_0 X6 = k1\_ordinal1 X4) \wedge ((k1\_funct\_1 \\
 & \quad X6 k1\_xboole\_0 = X3) \wedge ((\forall X7. (v3\_ordinal1 X7) \Rightarrow ((k1\_ordinal1 \\
 & \quad X7 \in k1\_ordinal1 X4) \Rightarrow (k1\_funct\_1 X6 (k1\_ordinal1 X7) = X2 X7 (k1\_funct\_1 \\
 & \quad X6 X7)))))) \wedge (\forall X7. (v3\_ordinal1 X7) \Rightarrow (((X7 \in k1\_ordinal1 X4) \wedge \\
 & \quad (v4\_ordinal1 X7) \Rightarrow ((X7 = k1\_xboole\_0) \vee (k1\_funct\_1 X6 X7 = X1 X7 \\
 & \quad (k5\_relat\_1 X6 X7)))))))))) \Rightarrow (\forall X4. (v3\_ordinal1 X4) \Rightarrow \\
 & \quad (X0 (k1\_ordinal1 X4) = X2 X4 (X0 X4)))
 \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. ((v3\_ordinal1 X0) \wedge (v3\_ordinal1 X1)) \Rightarrow (v3\_ordinal1 (k11\_ordinal2 X0 X1)) \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(v3\_ordinal1\ X0) \Rightarrow (\forall X1.(v3\_ordinal1\ X1) \Rightarrow (\forall X2. \\
& (v3\_ordinal1\ X2) \Rightarrow ((X2 = k11\_ordinal2\ X0\ X1) \Leftrightarrow (\exists X3. ((v5\_ordinal1 \\
& X3) \wedge ((v1\_relat\_1\ X3) \wedge ((v1\_funct\_1\ X3) \wedge (v1\_ordinal2\ X3)))))) \wedge \\
& ((X2 = k1\_ordinal2\ X3) \wedge ((k9\_xtuple\_0\ X3 = k1\_ordinal1\ X0) \wedge ((k1\_funct\_1 \\
& X3\ k1\_xboole\_0 = k1\_xboole\_0) \wedge ((\forall X4.(v3\_ordinal1\ X4) \Rightarrow \\
& ((k1\_ordinal1\ X4 \in k1\_ordinal1\ X0) \Rightarrow (k1\_funct\_1\ X3\ (k1\_ordinal1 \\
& X4) = k10\_ordinal2\ (k1\_funct\_1\ X3\ X4)\ X1)))) \wedge (\forall X4.(v3\_ordinal1 \\
& X4) \Rightarrow (((X4 \in k1\_ordinal1\ X0) \wedge (v4\_ordinal1\ X4)) \Rightarrow ((X4 = k1\_xboole\_0) \vee \\
& (k1\_funct\_1\ X3\ X4 = k3\_tarski\ (k4\_ordinal2\ (k5\_relat\_1\ X3\ X4))))))))))))) \\
& \tag{3}
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.(v3\_ordinal1\ X0) \Rightarrow (\forall X1.(v3\_ordinal1\ X1) \Rightarrow (k11\_ordinal2 \\
& (k1\_ordinal1\ X0)\ X1 = k10\_ordinal2\ (k11\_ordinal2\ X0\ X1)\ X1))
\end{aligned}$$