

t15_zfrefle1 (TMaf-
FktM52no39Los2Cp91CNusK4mMgHCJV)

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Let $v3_ordinal1 : \iota \Rightarrow o$ 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 $k5_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_ordinal3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k3_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k10_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k10_ordinal2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. (v1_relat_1 X1) \Rightarrow (k9_xtuple_0 (k5_relat_1 X1 X0) = k3_xboole_0 (k9_xtuple_0 X1) X0) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((v1_relat_1 X2) \wedge (v1_funct_1 X2)) \Rightarrow ((X0 \in k9_xtuple_0 (k5_relat_1 X2 X1)) \Rightarrow (k1_funct_1 (k5_relat_1 X2 X1) X0 = k1_funct_1 X2 X0)) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. ((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow ((v1_relat_1 (k5_relat_1 X0 X1)) \wedge (v1_funct_1 (k5_relat_1 X0 X1))) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. (((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge (v5_ordinal1 X0))) \wedge (v3_ordinal1 X1)) \Rightarrow ((v1_relat_1 (k5_relat_1 X0 X1)) \wedge ((v5_relat_1 (k5_relat_1 X0 X1) (k10_xtuple_0 X0)) \wedge (v5_ordinal1 (k5_relat_1 X0 X1)))) \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. (((v5_ordinal1 X0) \wedge ((v1_relat_1 X0) \wedge (v1_funct_1 X0) \wedge (v1_ordinal2 X0))) \wedge (v3_ordinal1 X1)) \Rightarrow ((v1_relat_1 (k5_relat_1 X0 X1)) \wedge (v1_ordinal2 (k5_relat_1 X0 X1))) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.(v1_relat_1 X0)\Rightarrow(v1_relat_1 (k5_relat_1 X0 X1)) \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((v3_ordinal1 X0)\wedge((v5_ordinal1 X1)\wedge \\ (v1_relat_1 X1)\wedge((v1_funct_1 X1)\wedge(v1_ordinal2 X1))))\Rightarrow((v5_ordinal1 \\ (k1_ordinal3 X0 X1))\wedge((v1_relat_1 (k1_ordinal3 X0 X1))\wedge((v1_funct_1 \\ (k1_ordinal3 X0 X1))\wedge(v1_ordinal2 (k1_ordinal3 X0 X1)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(X2 = k3_xboole_0 X0 X1)\Leftrightarrow(\forall X3. \\ (X3 \in X2)\Leftrightarrow((X3 \in X0)\wedge(X3 \in X1))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.(v3_ordinal1 X0)\Rightarrow(\forall X1.((v5_ordinal1 X1)\wedge \\ (v1_relat_1 X1)\wedge((v1_funct_1 X1)\wedge(v1_ordinal2 X1))))\Rightarrow(\forall X2. \\ ((v5_ordinal1 X2)\wedge((v1_relat_1 X2)\wedge((v1_funct_1 X2)\wedge(v1_ordinal2 \\ X2))))\Rightarrow((X2 = k1_ordinal3 X0 X1)\Leftrightarrow((k9_xtuple_0 X2 = k9_xtuple_0 \\ X1)\wedge(\forall X3.(v3_ordinal1 X3)\Rightarrow((X3 \in k9_xtuple_0 X1)\Rightarrow(k1_funct_1 \\ X2 X3 = k10_ordinal2 X0 (k1_funct_1 X1 X3))))))) \end{aligned} \quad (9)$$

Theorem 1

$$\begin{aligned} \forall X0.(v3_ordinal1 X0)\Rightarrow(\forall X1.(v3_ordinal1 X1)\Rightarrow(\forall X2. \\ ((v1_relat_1 X2)\wedge((v5_ordinal1 X2)\wedge((v1_funct_1 X2)\wedge(v1_ordinal2 \\ X2))))\Rightarrow(k5_relat_1 (k1_ordinal3 X0 X2) X1 = k1_ordinal3 X0 (k5_relat_1 \\ X2 X1)))) \end{aligned}$$