

t1_catalan2

(TMNaKUKwB4HEjkq79tG2u8rQirDtRB3jHaD)

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Let $v7_ordinal1 : \iota \Rightarrow o$ be given. Let $v5_ordinal1 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_finset_1 : \iota \Rightarrow o$ be given. Let $k1_ordinal4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_afinsq_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} \forall X0.(v7_ordinal1 X0) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((\\ v1_funct_1 X1) \wedge ((v5_ordinal1 X1) \wedge (v1_finset_1 X1)))) \Rightarrow (k1_ordinal4 \\ (k5_relat_1 X1 X0) (k2_afinsq_2 X1 X0) = X1)) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((v1_relat_1 X1) \wedge ((v5_relat_1 \\ X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v5_ordinal1 X1) \wedge (v1_finset_1 X1)))) \wedge \\ (v7_ordinal1 X2)) \Rightarrow ((v1_relat_1 (k2_afinsq_2 X1 X2)) \wedge ((v5_relat_1 \\ (k2_afinsq_2 X1 X2) X0) \wedge ((v1_funct_1 (k2_afinsq_2 X1 X2)) \wedge ((v5_ordinal1 \\ (k2_afinsq_2 X1 X2)) \wedge (v1_finset_1 (k2_afinsq_2 X1 X2))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge ((\\ v5_ordinal1 X0) \wedge (v1_finset_1 X0)))) \wedge (v7_ordinal1 X1)) \Rightarrow ((v1_relat_1 \\ (k2_afinsq_2 X0 X1)) \wedge ((v1_funct_1 (k2_afinsq_2 X0 X1)) \wedge ((v5_ordinal1 \\ (k2_afinsq_2 X0 X1)) \wedge (v1_finset_1 (k2_afinsq_2 X0 X1)))))) \end{aligned} \quad (3)$$

Theorem 1

$$\begin{aligned} \forall X0.\forall X1.(v7_ordinal1 X1) \Rightarrow (\forall X2.((v5_ordinal1 \\ X2) \wedge ((v1_relat_1 X2) \wedge ((v5_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (\\ v1_finset_1 X2)))))) \Rightarrow (\exists X3.((v5_ordinal1 X3) \wedge ((v1_relat_1 \\ X3) \wedge ((v5_relat_1 X3 X0) \wedge ((v1_funct_1 X3) \wedge (v1_finset_1 X3)))))) \wedge \\ (X2 = k1_ordinal4 (k5_relat_1 X2 X1) X3)) \end{aligned}$$