

t17_bagorder (TMN- snS3X65ZYBq5uW4GNqrMPcfMv9kxqwEH)

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Let $v7_ordinal1 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_valued_0 : \iota \Rightarrow o$ be given. Let $v2_pre_poly : \iota \Rightarrow o$ be given. Let $k1_bagorder : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k11_pre_poly : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_nat_d : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xreal_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_valued_0 : \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_binop_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $k5_numbers : \iota$ be given. Let $k1_nat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v3_valued_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0. \forall X1. ((v7_ordinal1 X0) \wedge (v7_ordinal1 X1)) \Rightarrow (k7_nat_d X0 X1 = k1_xreal_0 X0 X1) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((v7_ordinal1 X0) \wedge \\ & ((v7_ordinal1 X1) \wedge ((v7_ordinal1 X2) \wedge ((v1_relat_1 X3) \wedge ((v4_relat_1 \\ & X3 X0) \wedge ((v1_funct_1 X3) \wedge ((v1_partfun1 X3 X0) \wedge (v4_valued_0 X3))))))) \Rightarrow \\ & ((v1_relat_1 (k1_bagorder X0 X1 X2 X3)) \wedge ((v4_relat_1 (k1_bagorder \\ & X0 X1 X2 X3) (k7_nat_d X2 X1)) \wedge ((v1_funct_1 (k1_bagorder X0 X1 X2 \\ & X3)) \wedge ((v1_partfun1 (k1_bagorder X0 X1 X2 X3) (k7_nat_d X2 X1)) \wedge \\ & (v4_valued_0 (k1_bagorder X0 X1 X2 X3)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((v7_ordinal1 X0) \wedge \\ & ((v7_ordinal1 X1) \wedge ((v7_ordinal1 X2) \wedge ((v1_relat_1 X3) \wedge ((v4_relat_1 \\ & X3 X0) \wedge ((v1_funct_1 X3) \wedge (v1_partfun1 X3 X0))))))) \Rightarrow ((v1_relat_1 \\ & (k1_bagorder X0 X1 X2 X3)) \wedge ((v4_relat_1 (k1_bagorder X0 X1 X2 X3) \\ & (k7_nat_d X2 X1)) \wedge ((v1_funct_1 (k1_bagorder X0 X1 X2 X3)) \wedge (v1_partfun1 \\ & (k1_bagorder X0 X1 X2 X3) (k7_nat_d X2 X1)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1_relat_1 X1)\wedge((v4_relat_1 \\ & X1 X0)\wedge((v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v1_valued_0 X1))))\wedge \\ & ((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge((v1_partfun1 \\ & X2 X0)\wedge(v1_valued_0 X2))))))\Rightarrow((v1_relat_1 (k11_pre_poly X0 X1 \\ & X2))\wedge((v4_relat_1 (k11_pre_poly X0 X1 X2) X0)\wedge((v1_funct_1 (k11_pre_poly \\ & X0 X1 X2))\wedge(v1_partfun1 (k11_pre_poly X0 X1 X2) X0)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge(\\ & (v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v1_valued_0 X1))))\Rightarrow(\\ & \forall X2.((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 \\ & X2)\wedge((v1_partfun1 X2 X0)\wedge(v1_valued_0 X2))))\Rightarrow(\forall X3.(\\ & (v1_relat_1 X3)\wedge((v4_relat_1 X3 X0)\wedge((v1_funct_1 X3)\wedge(v1_partfun1 \\ & X3 X0))))\Rightarrow((X3 = k11_pre_poly X0 X1 X2)\Leftrightarrow(\forall X4.k1_funct_1 \\ & X3 X4 = k3_binop_2 (k1_funct_1 X1 X4) (k1_funct_1 X2 X4)))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v7_ordinal1 X0)\Rightarrow(\forall X1.(v7_ordinal1 X1)\Rightarrow(\forall X2. \\ & (v7_ordinal1 X2)\Rightarrow(\forall X3.((v1_relat_1 X3)\wedge((v4_relat_1 \\ & X3 X0)\wedge((v1_funct_1 X3)\wedge(v1_partfun1 X3 X0))))\Rightarrow(\forall X4.(\\ & (v1_relat_1 X4)\wedge((v4_relat_1 X4 (k7_nat_d X2 X1))\wedge((v1_funct_1 \\ & X4)\wedge(v1_partfun1 X4 (k7_nat_d X2 X1))))\Rightarrow((X4 = k1_bagorder X0 \\ & X1 X2 X3)\Leftrightarrow(\forall X5.(m2_subset_1 X5 k1_numbers k5_numbers)\Rightarrow \\ & ((X5 \in k7_nat_d X2 X1)\Rightarrow(k1_funct_1 X4 X5 = k1_funct_1 X3 (k1_nat_1 \\ & X1 X5)))))))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0)\wedge(v4_valued_0 X0))\Rightarrow((v1_relat_1 X0)\wedge(v3_valued_0 X0)) \quad (7)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0)\wedge(v3_valued_0 X0))\Rightarrow((v1_relat_1 X0)\wedge(v1_valued_0 X0)) \quad (8)$$

Theorem 1

$$\begin{aligned} & \forall X0.(v7_ordinal1 X0)\Rightarrow(\forall X1.(v7_ordinal1 X1)\Rightarrow(\forall X2. \\ & (v7_ordinal1 X2)\Rightarrow(\forall X3.((v1_relat_1 X3)\wedge((v4_relat_1 \\ & X3 X2)\wedge((v1_funct_1 X3)\wedge((v1_partfun1 X3 X2)\wedge((v4_valued_0 X3)\wedge \\ & (v2_pre_poly X3))))))\Rightarrow(\forall X4.((v1_relat_1 X4)\wedge((v4_relat_1 \\ & X4 X2)\wedge((v1_funct_1 X4)\wedge((v1_partfun1 X4 X2)\wedge((v4_valued_0 X4)\wedge \\ & (v2_pre_poly X4))))))\Rightarrow(k1_bagorder X2 X0 X1 (k11_pre_poly X2 X3 \\ & X4) = k11_pre_poly (k7_nat_d X1 X0) (k1_bagorder X2 X0 X1 X3) (k1_bagorder \\ & X2 X0 X1 X4)))) \end{aligned}$$