

t84_rfunct_1 (TMUh-
WPZ26JdK2Xi4pVmvvgM3NYw2pPXRpYia)

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Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v3_valued_0 : \iota \Rightarrow o$ be given. Let $v1_comseq_2 : \iota \Rightarrow o$ be given. Let $k5_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k18_valued_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k45_valued_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_seq_2 : \iota \Rightarrow o$ be given. Let $k1_valued_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_seq_2 : \iota \Rightarrow o$ be given. Let $k54_valued_1 : \iota \Rightarrow \iota$ be given. Let $k30_valued_1 : \iota \Rightarrow \iota$ be given. Let $v1_valued_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1_relat_1 X2) \wedge ((v1_funct_1 \\ & X2) \wedge (v3_valued_0 X2))) \Rightarrow (\forall X3. ((v1_relat_1 X3) \wedge ((v1_funct_1 \\ & X3) \wedge (v3_valued_0 X3))) \Rightarrow (((v1_seq_2 (k5_relat_1 X2 X0)) \wedge (v1_seq_2 \\ & (k5_relat_1 X3 X1))) \Rightarrow (v1_seq_2 (k5_relat_1 (k1_valued_1 X2 X3) \\ & (k3_xboole_0 X0 X1)))) \wedge (((v2_seq_2 (k5_relat_1 X2 X0)) \wedge (v2_seq_2 \\ & (k5_relat_1 X3 X1))) \Rightarrow (v2_seq_2 (k5_relat_1 (k1_valued_1 X2 X3) \\ & (k3_xboole_0 X0 X1)))) \wedge (((v1_comseq_2 (k5_relat_1 X2 X0)) \wedge (v1_comseq_2 \\ & (k5_relat_1 X3 X1))) \Rightarrow (v1_comseq_2 (k5_relat_1 (k1_valued_1 X2 \\ & X3) (k3_xboole_0 X0 X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v1_funct_1 X1) \wedge (v3_valued_0 \\ & X1))) \Rightarrow ((v1_comseq_2 (k5_relat_1 X1 X0)) \Rightarrow ((v1_comseq_2 (k5_relat_1 \\ & (k54_valued_1 X1) X0)) \wedge (v1_comseq_2 (k5_relat_1 (k30_valued_1 \\ & X1) X0)))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (v1_relat_1 X2) \Rightarrow (k5_relat_1 \\ & (k5_relat_1 X2 X0) X1 = k5_relat_1 X2 (k3_xboole_0 X0 X1)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v1_funct_1 X1)\wedge(v1_valued_0 \\ X1)))\Rightarrow(\forall X2.((v1_relat_1 X2)\wedge((v1_funct_1 X2)\wedge(v1_valued_0 \\ X2)))\Rightarrow((k5_relat_1 (k18_valued_1 X1 X2) X0 = k18_valued_1 (k5_relat_1 \\ X1 X0) (k5_relat_1 X2 X0))\wedge((k5_relat_1 (k18_valued_1 X1 X2) X0 = \\ k18_valued_1 (k5_relat_1 X1 X0) X2)\wedge(k5_relat_1 (k18_valued_1 \\ X1 X2) X0 = k18_valued_1 X1 (k5_relat_1 X2 X0)))))) \end{aligned} \quad (4)$$

Assume the following.

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

Assume the following.

$$\begin{aligned} \forall X0.((v1_relat_1 X0)\wedge((v1_funct_1 X0)\wedge(v3_valued_0 X0)))\Rightarrow \\ ((v1_relat_1 (k30_valued_1 X0))\wedge((v1_funct_1 (k30_valued_1 \\ X0))\wedge((v1_valued_0 (k30_valued_1 X0))\wedge(v3_valued_0 (k30_valued_1 \\ X0)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X0)\wedge(v3_valued_0 X0))\Rightarrow((\\ v1_relat_1 (k5_relat_1 X0 X1))\wedge(v3_valued_0 (k5_relat_1 X0 X1))) \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((v1_relat_1 X0)\wedge((v1_funct_1 X0)\wedge(\\ v3_valued_0 X0)\wedge(v1_comseq_2 X0))))\wedge((v1_relat_1 X1)\wedge((v1_funct_1 \\ X1)\wedge((v3_valued_0 X1)\wedge(v1_comseq_2 X1))))\Rightarrow((v1_relat_1 (k18_valued_1 \\ X0 X1))\wedge((v1_funct_1 (k18_valued_1 X0 X1))\wedge((v3_valued_0 (k18_valued_1 \\ X0 X1))\wedge(v1_comseq_2 (k18_valued_1 X0 X1)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.(v1_relat_1 X0)\Rightarrow(v1_relat_1 (k5_relat_1 \\ X0 X1)) \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.((v1_relat_1 X0)\wedge((v1_funct_1 X0)\wedge(v1_valued_0 X0)))\Rightarrow \\ (\forall X1.((v1_relat_1 X1)\wedge((v1_funct_1 X1)\wedge(v1_valued_0 \\ X1)))\Rightarrow(k45_valued_1 X0 X1 = k1_valued_1 X0 (k30_valued_1 X1))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0)\wedge(v3_valued_0 X0))\Rightarrow((v1_relat_1 \\ X0)\wedge(v1_valued_0 X0)) \quad (11)$$

Theorem 1

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v1_relat_1 X2)\wedge((v1_funct_1 \\ & X2)\wedge(v3_valued_0 X2)))\Rightarrow(\forall X3.((v1_relat_1 X3)\wedge((v1_funct_1 \\ & X3)\wedge(v3_valued_0 X3)))\Rightarrow(((v1_comseq_2 (k5_relat_1 X2 X0))\wedge(\\ & v1_comseq_2 (k5_relat_1 X3 X1)))\Rightarrow((v1_comseq_2 (k5_relat_1 (\\ & k18_valued_1 X2 X3) (k3_xboole_0 X0 X1)))\wedge(v1_comseq_2 (k5_relat_1 \\ & (k45_valued_1 X2 X3) (k3_xboole_0 X0 X1)))))) \end{aligned}$$