

t51_partfun1 (TMctRz- JEiXkf2xUboPCEeUmUAeH2EhebK5C)

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Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $r1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1.((\\ v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow (\forall X2.((v1_relat_1 X2) \wedge \\ (v1_funct_1 X2)) \Rightarrow ((k2_xboole_0 X0 X1 = X2) \Rightarrow (\forall X3.(X3 \in k3_xboole_0 \\ (k9_xtuple_0 X0) (k9_xtuple_0 X1)) \Rightarrow (k1_funct_1 X0 X3 = k1_funct_1 \\ X1 X3)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1.((\\ v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow (\neg(\forall X2.(X2 \in k3_xboole_0 \\ (k9_xtuple_0 X0) (k9_xtuple_0 X1)) \Rightarrow (k1_funct_1 X0 X2 = k1_funct_1 \\ X1 X2)) \wedge (\forall X2.((v1_relat_1 X2) \wedge (v1_funct_1 X2)) \Rightarrow (k2_xboole_0 \\ X0 X1 \neq X2)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0. \forall X1. ((v1_relat_1 X0) \wedge (v1_relat_1 X1)) \Rightarrow (v1_relat_1 \\ (k2_xboole_0 X0 X1)) \tag{3}$$

Assume the following.

$$\begin{aligned} \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1.((\\ v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow ((r1_partfun1 X0 X1) \Leftrightarrow (\forall X2. \\ (X2 \in k3_xboole_0 (k9_xtuple_0 X0) (k9_xtuple_0 X1)) \Rightarrow (k1_funct_1 \\ X0 X2 = k1_funct_1 X1 X2)))))) \end{aligned} \tag{4}$$

Theorem 1

$$\begin{aligned} \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1.((\\ v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow ((r1_partfun1 X0 X1) \Leftrightarrow (\exists X2. \\ ((v1_relat_1 X2) \wedge (v1_funct_1 X2)) \wedge (k2_xboole_0 X0 X1 = X2)))))) \end{aligned}$$