t55_funct_4 (TMHDwN-VpqUQQtea9u8chyhgrkUrFCmWA9Qf)

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Let $v1\_relat\_1 : \iota \Rightarrow o$ be given. Let $v1\_funct\_1 : \iota \Rightarrow o$ be given. Let $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9\_xtuple\_0 : \iota \Rightarrow \iota$ be given. Let $k3\_funct\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((v1\_relat\_1\ X4) \wedge (v1\_funct\_1\ X4)) \Rightarrow (\forall X5.((v1\_relat\_1\ X5) \wedge (v1\_funct\_1\ X5)) \Rightarrow ((k4\_tarski\ (k4\_tarski\ X0\ X1)\ (k4\_tarski\ X2\ X3) \in k9\_xtuple\_0\ (k3\_funct\_4\ X4\ X5)) \Leftrightarrow ((k4\_tarski\ X0\ X2 \in k9\_xtuple\_0\ X4) \wedge (k4\_tarski\ X1\ X3 \in k9\_xtuple\_0\ X5)))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.(((v1\_relat\_1\ X0) \wedge (v1\_funct\_1\ X0)) \wedge ((v1\_relat\_1\ X1) \wedge (v1\_funct\_1\ X1))) \Rightarrow ((v1\_relat\_1\ (k3\_funct\_4\ X0\ X1)) \wedge (v1\_funct\_1\ (k3\_funct\_4\ X0\ X1))) \tag{2}$$

Assume the following.

$$\forall X0.((v1\_relat\_1\ X0) \wedge (v1\_funct\_1\ X0)) \Rightarrow (\forall X1.((v1\_relat\_1\ X1) \wedge (v1\_funct\_1\ X1)) \Rightarrow (\forall X2.((v1\_relat\_1\ X2) \wedge (v1\_funct\_1\ X2)) \Rightarrow ((X2 = k3\_funct\_4\ X0\ X1) \Leftrightarrow ((\forall X3.(X3 \in k9\_xtuple\_0\ X2) \Leftrightarrow (\exists X4.\exists X5.\exists X6.\exists X7.(X3 = k4\_tarski\ (k4\_tarski\ X4\ X6)\ (k4\_tarski\ X5\ X7)) \wedge ((k4\_tarski\ X4\ X5 \in k9\_xtuple\_0\ X0) \wedge (k4\_tarski\ X6\ X7 \in k9\_xtuple\_0\ X1)))) \wedge (\forall X3.\forall X4.\forall X5.\forall X6.((k4\_tarski\ X3\ X4 \in k9\_xtuple\_0\ X0) \wedge (k4\_tarski\ X5\ X6 \in k9\_xtuple\_0\ X1)) \Rightarrow (k1\_binop\_1\ X2\ (k4\_tarski\ X3\ X5)\ (k4\_tarski\ X4\ X6) = k4\_tarski\ (k1\_binop\_1\ X0\ X3\ X4)\ (k1\_binop\_1\ X1\ X5\ X6))))))) \tag{3}$$

Theorem 1

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((v1\_relat\_1\ X4) \wedge (v1\_funct\_1\ X4)) \Rightarrow (\forall X5.((v1\_relat\_1\ X5) \wedge (v1\_funct\_1\ X5)) \Rightarrow ((k4\_tarski\ (k4\_tarski\ X0\ X1)\ (k4\_tarski\ X2\ X3) \in k9\_xtuple\_0\ (k3\_funct\_4\ X4\ X5)) \Rightarrow (k1\_binop\_1\ (k3\_funct\_4\ X4\ X5)\ (k4\_tarski\ X0\ X1)\ (k4\_tarski\ X2\ X3) = k4\_tarski\ (k1\_binop\_1\ X4\ X0\ X2)\ (k1\_binop\_1\ X5\ X1\ X3))))$$