

t43\_qc\_lang2 (TMdf-  
SzVXwxY6wTqB6V2sDSEy6Ao623TVbV7)

October 27, 2020

Let  $m1\_qc\_lang1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $r1\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k13\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k12\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $v3\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v5\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k18\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k14\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k3\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k15\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1 X0) \Rightarrow ((\neg v2\_qc\_lang1 (k12\_qc\_lang1 X0) \\ & X0) \wedge ((\neg v3\_qc\_lang1 (k12\_qc\_lang1 X0) X0) \wedge ((\neg v4\_qc\_lang1 (k12\_qc\_lang1 \\ & X0) X0) \wedge ((\neg v5\_qc\_lang1 (k12\_qc\_lang1 X0) X0) \wedge (\forall X1.(m1\_subset\_1 \\ & X1 (k9\_qc\_lang1 X0)) \Rightarrow ((\neg (v2\_qc\_lang1 X1 X0) \wedge (v3\_qc\_lang1 X1 X0)) \wedge \\ & ((\neg (v2\_qc\_lang1 X1 X0) \wedge (v4\_qc\_lang1 X1 X0)) \wedge ((\neg (v2\_qc\_lang1 \\ & X1 X0) \wedge (v5\_qc\_lang1 X1 X0)) \wedge ((\neg (v3\_qc\_lang1 X1 X0) \wedge (v4\_qc\_lang1 \\ & X1 X0)) \wedge ((\neg (v3\_qc\_lang1 X1 X0) \wedge (v5\_qc\_lang1 X1 X0)) \wedge ((\neg (v4\_qc\_lang1 \\ & X1 X0) \wedge (v5\_qc\_lang1 X1 X0))))))))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k9\_qc\_lang1 \\ & X0)) \Rightarrow (k18\_qc\_lang1 X0 (k13\_qc\_lang1 X0 X1) = X1)) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1\_qc\_lang1 X0) \wedge ((m1\_subset\_1 \\ & X1 (k9\_qc\_lang1 X0)) \wedge (m1\_subset\_1 X2 (k9\_qc\_lang1 X0)))) \Rightarrow (m1\_subset\_1 \\ & (k14\_qc\_lang1 X0 X1 X2) (k9\_qc\_lang1 X0)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((m1\_qc\_lang1 X0) \wedge (m1\_subset\_1 X1 (k9\_qc\_lang1 \\ & X0))) \Rightarrow (m1\_subset\_1 (k13\_qc\_lang1 X0 X1) (k9\_qc\_lang1 X0)) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1 \\ X0)) \Rightarrow ((v5\_qc\_lang1\ X1\ X0) \Leftrightarrow (\exists X2.(m2\_subset\_1\ X2\ (k2\_qc\_lang1 \\ X0)\ (k3\_qc\_lang1\ X0)) \wedge (\exists X3.(m1\_subset\_1\ X3\ (k9\_qc\_lang1 \\ X0)) \wedge (X1 = k15\_qc\_lang1\ X0\ X2\ X3)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1 \\ X0)) \Rightarrow ((v4\_qc\_lang1\ X1\ X0) \Leftrightarrow (\exists X2.(m1\_subset\_1\ X2\ (k9\_qc\_lang1 \\ X0)) \wedge (\exists X3.(m1\_subset\_1\ X3\ (k9\_qc\_lang1\ X0)) \wedge (X1 = k14\_qc\_lang1 \\ X0\ X2\ X3)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1 \\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (k9\_qc\_lang1\ X0)) \Rightarrow ((r1\_qc\_lang2 \\ X0\ X1\ X2) \Leftrightarrow (\neg(X2 \neq k13\_qc\_lang1\ X0\ X1) \wedge ((\forall X3.(m1\_subset\_1 \\ X3\ (k9\_qc\_lang1\ X0)) \Rightarrow ((X2 \neq k14\_qc\_lang1\ X0\ X1\ X3) \wedge (X2 \neq k14\_qc\_lang1 \\ X0\ X3\ X1))) \wedge (\forall X3.(m2\_subset\_1\ X3\ (k2\_qc\_lang1\ X0)\ (k3\_qc\_lang1 \\ X0)) \Rightarrow (X2 \neq k15\_qc\_lang1\ X0\ X3\ X1))))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1 \\ X0)) \Rightarrow ((v3\_qc\_lang1\ X1\ X0) \Leftrightarrow (\exists X2.(m1\_subset\_1\ X2\ (k9\_qc\_lang1 \\ X0)) \wedge (X1 = k13\_qc\_lang1\ X0\ X2)))) \end{aligned} \quad (8)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (k9\_qc\_lang1 \\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (k9\_qc\_lang1\ X0)) \Rightarrow ((r1\_qc\_lang2 \\ X0\ X1\ (k13\_qc\_lang1\ X0\ X2)) \Leftrightarrow (X1 = X2)))) \end{aligned}$$