

## t65\_cqc\_the3

(TMSSn9nUbGY2GiRpK4XMaVsL6ek7M47iWgS)

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Let  $m1\_qc\_lang1 : \iota \Rightarrow o$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k3\_cqc\_lang : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k3\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k13\_cqc\_lang : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k24\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r7\_cqc\_the3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k11\_cqc\_lang : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_cqc\_the1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k8\_cqc\_lang : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k15\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_qc\_lang2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m2\_subset\_1 X1 (k9\_qc\_lang1 \\ X0) (k3\_cqc\_lang X0)) \Rightarrow (\forall X2.(m2\_subset\_1 X2 (k9\_qc\_lang1 \\ X0) (k3\_cqc\_lang X0)) \Rightarrow (\forall X3.(m2\_subset\_1 X3 (k2\_qc\_lang1 \\ X0) (k3\_cqc\_lang X0)) \Rightarrow ((r7\_cqc\_the3 X0 X1 X2) \Rightarrow (r7\_cqc\_the3 X0 \\ (k11\_cqc\_lang X0 X3 X1) (k11\_cqc\_lang X0 X3 X2)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m2\_subset\_1 X1 (k9\_qc\_lang1 \\ X0) (k3\_cqc\_lang X0)) \Rightarrow (\forall X2.(m2\_subset\_1 X2 (k9\_qc\_lang1 \\ X0) (k3\_cqc\_lang X0)) \Rightarrow ((r7\_cqc\_the3 X0 X1 X2) \Leftrightarrow ((v2\_cqc\_the1 ( \\ k8\_cqc\_lang X0 X1 X2) X0) \wedge (v2\_cqc\_the1 (k8\_cqc\_lang X0 X2 X1) X0)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m2\_subset\_1 X1 (k2\_qc\_lang1 \\ X0) (k3\_qc\_lang1 X0)) \Rightarrow (\forall X2.(m2\_subset\_1 X2 (k2\_qc\_lang1 \\ X0) (k3\_qc\_lang1 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (k9\_qc\_lang1 \\ X0)) \Rightarrow (\neg(X1 \neq X2) \wedge ((\neg X1 \in k24\_qc\_lang1 X0 X3) \wedge (X1 \in k24\_qc\_lang1 \\ X0 (k13\_cqc\_lang X0 X3 X2))))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m2\_subset\_1\ X1\ (k9\_qc\_lang1 \\
& \quad X0)\ (k3\_cqc\_lang\ X0)) \Rightarrow (\forall X2.(m2\_subset\_1\ X2\ (k9\_qc\_lang1 \\
& \quad X0)\ (k3\_cqc\_lang\ X0)) \Rightarrow (\forall X3.(m1\_subset\_1\ X3\ (k9\_qc\_lang1 \\
& \quad X0)) \Rightarrow (\forall X4.(m2\_subset\_1\ X4\ (k2\_qc\_lang1\ X0)\ (k3\_qc\_lang1 \\
& \quad X0)) \Rightarrow (\forall X5.(m2\_subset\_1\ X5\ (k2\_qc\_lang1\ X0)\ (k3\_qc\_lang1 \\
& \quad X0)) \Rightarrow (((X1 = k13\_cqc\_lang\ X0\ X3\ X4) \wedge (X2 = k13\_cqc\_lang\ X0\ X3\ X5)) \Rightarrow \\
& \quad ((X4 \in k24\_qc\_lang1\ X0\ X3) \vee ((X5 \in k24\_qc\_lang1\ X0\ X1) \vee (v2\_cqc\_the1 \\
& \quad (k8\_cqc\_lang\ X0\ (k11\_cqc\_lang\ X0\ X4\ X1)\ (k11\_cqc\_lang\ X0\ X5\ X2)) \\
& \quad X0)))))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m2\_subset\_1\ X1\ (k2\_qc\_lang1 \\
& \quad X0)\ (k3\_qc\_lang1\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (k9\_qc\_lang1 \\
& \quad X0)) \Rightarrow ((m2\_subset\_1\ (k15\_qc\_lang1\ X0\ X1\ X2)\ (k9\_qc\_lang1\ X0)\ (k3\_cqc\_lang \\
& \quad X0)) \Leftrightarrow (m2\_subset\_1\ X2\ (k9\_qc\_lang1\ X0)\ (k3\_cqc\_lang\ X0))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((m1\_qc\_lang1\ X0) \wedge ((m1\_subset\_1 \\
& \quad X1\ (k3\_cqc\_lang\ X0)) \wedge (m1\_subset\_1\ X2\ (k3\_cqc\_lang\ X0)))) \Rightarrow ((r7\_cqc\_the3 \\
& \quad X0\ X1\ X2) \Rightarrow (r7\_cqc\_the3\ X0\ X2\ X1))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((\neg v1\_xboole\_0\ X0) \wedge ((\neg v1\_xboole\_0\ X1) \wedge \\
& \quad (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\
& \quad X2\ X0\ X1) \Leftrightarrow (m1\_subset\_1\ X2\ X1))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((m1\_qc\_lang1\ X0) \wedge ((m1\_subset\_1 \\
& \quad X1\ (k3\_cqc\_lang\ X0)) \wedge (m1\_subset\_1\ X2\ (k3\_cqc\_lang\ X0)))) \Rightarrow (k8\_cqc\_lang \\
& \quad X0\ X1\ X2 = k2\_qc\_lang2\ X0\ X1\ X2)
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.((m1\_qc\_lang1\ X0) \wedge ((m1\_subset\_1 \\
& \quad X1\ (k3\_qc\_lang1\ X0)) \wedge (m1\_subset\_1\ X2\ (k3\_cqc\_lang\ X0)))) \Rightarrow (k11\_cqc\_lang \\
& \quad X0\ X1\ X2 = k15\_qc\_lang1\ X0\ X1\ X2)
\end{aligned} \tag{9}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\neg v1\_xboole\_0\ (k3\_qc\_lang1\ X0)) \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((m1\_qc\_lang1\ X0) \wedge (m1\_subset\_1\ X1\ (k3\_cqc\_lang \\
& \quad X0))) \Rightarrow (v2\_cqc\_the1\ (k2\_qc\_lang2\ X0\ X1\ X1)\ X0)
\end{aligned} \tag{11}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\neg v1\_xboole\_0 (k3\_cqc\_lang X0)) \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\ & X2 X0 X1) \Rightarrow (m1\_subset\_1 X2 X0)) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (m1\_subset\_1 (k3\_qc\_lang1 X0) (k1\_zfmisc\_1 (k2\_qc\_lang1 X0))) \quad (14)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (m1\_subset\_1 (k3\_cqc\_lang X0) (k1\_zfmisc\_1 (k9\_qc\_lang1 X0))) \quad (15)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1\_qc\_lang1 X0) \wedge ((m1\_subset\_1 \\ & X1 (k3\_qc\_lang1 X0)) \wedge (m1\_subset\_1 X2 (k3\_cqc\_lang X0)))) \Rightarrow (m2\_subset\_1 \\ & (k11\_cqc\_lang X0 X1 X2) (k9\_qc\_lang1 X0) (k3\_cqc\_lang X0)) \end{aligned} \quad (16)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \Rightarrow (v1\_xboole\_0 X1)) \quad (17)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m2\_subset\_1 X1 (k9\_qc\_lang1 \\ & X0) (k3\_cqc\_lang X0)) \Rightarrow (\forall X2.(m2\_subset\_1 X2 (k9\_qc\_lang1 \\ & X0) (k3\_cqc\_lang X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (k9\_qc\_lang1 \\ & X0)) \Rightarrow (\forall X4.(m2\_subset\_1 X4 (k2\_qc\_lang1 X0) (k3\_qc\_lang1 \\ & X0)) \Rightarrow (\forall X5.(m2\_subset\_1 X5 (k2\_qc\_lang1 X0) (k3\_qc\_lang1 \\ & X0)) \Rightarrow (((X1 = k13\_cqc\_lang X0 X3 X4) \wedge (X2 = k13\_cqc\_lang X0 X3 X5)) \Rightarrow \\ & ((X4 \in k24\_qc\_lang1 X0 X3) \vee ((X5 \in k24\_qc\_lang1 X0 X3) \vee (r7\_cqc.the3 \\ & X0 (k11\_cqc\_lang X0 X4 X1) (k11\_cqc\_lang X0 X5 X2)))))))))) \end{aligned}$$