

l70_substut1

(TMLno1Ura5di5RHUiSRGaB5M42VKnvGKyFm)

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Let $m1_qc_lang1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k16_subst1 : \iota \Rightarrow \iota$ be given. Let $k9_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_cqc_lang : \iota \Rightarrow \iota$ be given. Let $v4_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k10_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k16_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k18_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_subst1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k26_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k19_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v5_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k13_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k27_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v6_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k14_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k28_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k29_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v7_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k36_subst1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k31_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let

$v1_xboole_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
& \forall X0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota. \forall X1 : \iota \Rightarrow \iota \Rightarrow \iota. \forall X2 : \\
& \quad \iota \Rightarrow \iota. \forall X3 : \iota \Rightarrow \iota. \forall X4. \forall X5. \forall X6. \\
& \quad \forall X7. \forall X8. ((m1_qc_lang1 X8) \wedge ((\neg v1_xboole_0 X7) \wedge \\
& \quad ((v1_funct_1 X6) \wedge ((v1_funct_2 X6 (k16_subst1 X8) X7) \wedge (m1_subset_1 \\
& \quad X6 (k1_zfmisc_1 (k2_zfmisc_1 (k16_subst1 X8) X7)))))) \wedge ((v1_funct_1 \\
& \quad X5) \wedge ((v1_funct_2 X5 (k16_subst1 X8) X7) \wedge (m1_subset_1 X5 (k1_zfmisc_1 \\
& \quad (k2_zfmisc_1 (k16_subst1 X8) X7)))))) \wedge ((m1_subset_1 X4 X7) \wedge \\
& \quad ((\forall X9. m1_subset_1 (X3 X9) X7) \wedge ((\forall X9. m1_subset_1 \\
& \quad (X2 X9) X7) \wedge ((\forall X9. \forall X10. m1_subset_1 (X1 X9 X10) X7) \wedge \\
& \quad (\forall X9. \forall X10. \forall X11. m1_subset_1 (X0 X9 X10 X11) \\
& \quad X7)))))) \Rightarrow ((\forall X9. (m1_subset_1 X9 (k16_subst1 X8)) \Rightarrow \\
& \quad (\forall X10. (m1_subset_1 X10 X7) \Rightarrow (\forall X11. (m1_subset_1 \\
& \quad X11 X7) \Rightarrow ((v2_subst1 X9 X8) \Rightarrow (k3_funct_2 (k16_subst1 X8) X7 \\
& \quad X6 X9 = X4)) \wedge ((v4_subst1 X9 X8) \Rightarrow (k3_funct_2 (k16_subst1 X8) \\
& \quad X7 X6 X9 = X3 X9)) \wedge (((v5_subst1 X9 X8) \wedge (X10 = k3_funct_2 (k16_subst1 \\
& \quad X8) X7 X6 (k27_subst1 X8 X9))) \Rightarrow (k3_funct_2 (k16_subst1 X8) \\
& \quad X7 X6 X9 = X2 X10)) \wedge (((v6_subst1 X9 X8) \wedge ((X10 = k3_funct_2 (k16_subst1 \\
& \quad X8) X7 X6 (k28_subst1 X8 X9)) \wedge (X11 = k3_funct_2 (k16_subst1 \\
& \quad X8) X7 X6 (k29_subst1 X8 X9)))) \Rightarrow (k3_funct_2 (k16_subst1 X8) \\
& \quad X7 X6 X9 = X1 X10 X11)) \wedge ((v7_subst1 X9 X8) \wedge (X10 = k3_funct_2 (k16_subst1 \\
& \quad X8) X7 X6 (k31_subst1 X8 X9))) \Rightarrow (k3_funct_2 (k16_subst1 X8) \\
& \quad X7 X6 X9 = X0 X8 X9 X10)))))) \wedge (\forall X9. (m1_subset_1 X9 (k16_subst1 \\
& \quad X8)) \Rightarrow (\forall X10. (m1_subset_1 X10 X7) \Rightarrow (\forall X11. (m1_subset_1 \\
& \quad X11 X7) \Rightarrow ((v2_subst1 X9 X8) \Rightarrow (k3_funct_2 (k16_subst1 X8) X7 \\
& \quad X5 X9 = X4)) \wedge ((v4_subst1 X9 X8) \Rightarrow (k3_funct_2 (k16_subst1 X8) \\
& \quad X7 X5 X9 = X3 X9)) \wedge (((v5_subst1 X9 X8) \wedge (X10 = k3_funct_2 (k16_subst1 \\
& \quad X8) X7 X5 (k27_subst1 X8 X9))) \Rightarrow (k3_funct_2 (k16_subst1 X8) \\
& \quad X7 X5 X9 = X2 X10)) \wedge (((v6_subst1 X9 X8) \wedge ((X10 = k3_funct_2 (k16_subst1 \\
& \quad X8) X7 X5 (k28_subst1 X8 X9)) \wedge (X11 = k3_funct_2 (k16_subst1 \\
& \quad X8) X7 X5 (k29_subst1 X8 X9)))) \Rightarrow (k3_funct_2 (k16_subst1 X8) \\
& \quad X7 X5 X9 = X1 X10 X11)) \wedge ((v7_subst1 X9 X8) \wedge (X10 = k3_funct_2 (k16_subst1 \\
& \quad X8) X7 X5 (k31_subst1 X8 X9))) \Rightarrow (k3_funct_2 (k16_subst1 X8) \\
& \quad X7 X5 X9 = X0 X8 X9 X10)))))) \Rightarrow (r2_funct_2 (k16_subst1 X8) X7 \\
& \quad X6 X5))
\end{aligned}$$

(1)

Theorem 1

$$\begin{aligned}
& \forall X0.(m1_qc_lang1\ X0) \Rightarrow (\forall X1.((v1_funct_1\ X1) \wedge ((\\
& \quad v1_funct_2\ X1\ (k16_subst1\ X0)\ (k9_qc_lang1\ X0)) \wedge (m1_subset_1 \\
& \quad X1\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k16_subst1\ X0)\ (k9_qc_lang1\ X0)))))) \Rightarrow \\
& \quad (\forall X2.((v1_funct_1\ X2) \wedge ((v1_funct_2\ X2\ (k16_subst1\ X0) \\
& \quad (k9_qc_lang1\ X0)) \wedge (m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1 \\
& \quad (k16_subst1\ X0)\ (k9_qc_lang1\ X0)))))) \Rightarrow (((\forall X3.(m1_subset_1 \\
& \quad X3\ (k16_subst1\ X0)) \Rightarrow (((v2_subst1\ X3\ X0) \Rightarrow (k3_funct_2\ (k16_subst1 \\
& \quad X0)\ (k9_qc_lang1\ X0)\ X1\ X3 = k5_cqc_lang\ X0)) \wedge (((v4_subst1\ X3 \\
& \quad X0) \Rightarrow (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1\ X0)\ X1\ X3 = k10_qc_lang1 \\
& \quad X0\ (k16_qc_lang1\ X0\ (k18_subst1\ X0\ X3))\ (k3_subst1\ X0\ (k26_subst1 \\
& \quad X0\ X3)\ (k19_subst1\ X0\ X3)))) \wedge (((v5_subst1\ X3\ X0) \Rightarrow (k3_funct_2 \\
& \quad (k16_subst1\ X0)\ (k9_qc_lang1\ X0)\ X1\ X3 = k13_qc_lang1\ X0\ (k3_funct_2 \\
& \quad (k16_subst1\ X0)\ (k9_qc_lang1\ X0)\ X1\ (k27_subst1\ X0\ X3)))) \wedge \\
& \quad (((v6_subst1\ X3\ X0) \Rightarrow (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1 \\
& \quad X0)\ X1\ X3 = k14_qc_lang1\ X0\ (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1 \\
& \quad X0)\ X1\ (k28_subst1\ X0\ X3))\ (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1 \\
& \quad X0)\ X1\ (k29_subst1\ X0\ X3)))) \wedge ((v7_subst1\ X3\ X0) \Rightarrow (k3_funct_2 \\
& \quad (k16_subst1\ X0)\ (k9_qc_lang1\ X0)\ X1\ X3 = k36_subst1\ X0\ X3\ (k3_funct_2 \\
& \quad (k16_subst1\ X0)\ (k9_qc_lang1\ X0)\ X1\ (k31_subst1\ X0\ X3)))))) \wedge \\
& \quad (\forall X3.(m1_subset_1\ X3\ (k16_subst1\ X0)) \Rightarrow (((v2_subst1 \\
& \quad X3\ X0) \Rightarrow (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1\ X0)\ X2\ X3 = k5_cqc_lang \\
& \quad X0)) \wedge (((v4_subst1\ X3\ X0) \Rightarrow (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1 \\
& \quad X0)\ X2\ X3 = k10_qc_lang1\ X0\ (k16_qc_lang1\ X0\ (k18_subst1\ X0\ X3)) \\
& \quad (k3_subst1\ X0\ (k26_subst1\ X0\ X3)\ (k19_subst1\ X0\ X3)))) \wedge (\\
& \quad ((v5_subst1\ X3\ X0) \Rightarrow (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1 \\
& \quad X0)\ X2\ X3 = k13_qc_lang1\ X0\ (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1 \\
& \quad X0)\ X2\ (k27_subst1\ X0\ X3)))) \wedge (((v6_subst1\ X3\ X0) \Rightarrow (k3_funct_2 \\
& \quad (k16_subst1\ X0)\ (k9_qc_lang1\ X0)\ X2\ X3 = k14_qc_lang1\ X0\ (k3_funct_2 \\
& \quad (k16_subst1\ X0)\ (k9_qc_lang1\ X0)\ X2\ (k28_subst1\ X0\ X3))\ (k3_funct_2 \\
& \quad (k16_subst1\ X0)\ (k9_qc_lang1\ X0)\ X2\ (k29_subst1\ X0\ X3)))) \wedge \\
& \quad ((v7_subst1\ X3\ X0) \Rightarrow (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1 \\
& \quad X0)\ X2\ X3 = k36_subst1\ X0\ X3\ (k3_funct_2\ (k16_subst1\ X0)\ (k9_qc_lang1 \\
& \quad X0)\ X2\ (k31_subst1\ X0\ X3)))))) \Rightarrow (r2_funct_2\ (k16_subst1 \\
& \quad X0)\ (k9_qc_lang1\ X0)\ X1\ X2)))
\end{aligned}$$