

thm_2Equotient_2ERES_FORALL_REGULAR (TMPZ6SmJXNUqjUXyUd7PXC2SdEB8e7Vc7Cu)

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Definition 1 We define `c_2Emin_2E_3D` to be $\lambda A.\lambda x \in A.\lambda y \in A.inj_o (x = y)$ of type $\iota \Rightarrow \iota$.

Definition 2 We define `c_2Ebool_2EIN` to be $\lambda A.27a : \iota.(\lambda V0x \in A.27a.(\lambda V1f \in (2^{A-27a}).(ap V1f V0x)))$

Definition 3 We define `c_2Emin_2E_3D_3D_3E` to be $\lambda P \in 2.\lambda Q \in 2.inj_o (p P \Rightarrow p Q)$ of type ι .

Definition 4 We define `c_2Ebool_2ET` to be $(ap (ap (c_2Emin_2E_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

Definition 5 We define `c_2Ebool_2E_21` to be $\lambda A.27a : \iota.(\lambda V0P \in (2^{A-27a}).(ap (ap (c_2Emin_2E_3D (2^{A-27a}).(ap V0P V0P)) (ap V1x V1x))))$

Definition 6 We define `c_2Ebool_2ERES_FORALL` to be $\lambda A.27a : \iota.(\lambda V0p \in (2^{A-27a}).(\lambda V1m \in (2^{A-27a}).(ap V1m V1m)))$

Assume the following.

$$\forall A.27a.nonempty A.27a \Rightarrow (\forall V0x \in A.27a.(\forall V1y \in A.27a.((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \quad (1)$$

Assume the following.

$$\forall A.27a.nonempty A.27a \Rightarrow (\forall V0P \in (2^{A-27a}).(\forall V1x \in A.27a.((p (ap (ap (c_2Ebool_2EIN A.27a) V1x) V0P)) \Leftrightarrow (p (ap V0P V1x)))))) \quad (2)$$

Assume the following.

$$\forall A.27a.nonempty A.27a \Rightarrow (\forall V0P \in (2^{A-27a}).(\forall V1f \in (2^{A-27a}).((p (ap (ap (c_2Ebool_2ERES_FORALL A.27a) V0P) V1f)) \Leftrightarrow (\forall V2x \in A.27a.((p (ap (ap (c_2Ebool_2EIN A.27a) V2x) V0P)) \Rightarrow (p (ap V1f V2x)))))))) \quad (3)$$

Theorem 1

$$\forall A.27a.nonempty A.27a \Rightarrow (\forall V0P \in (2^{A-27a}).(\forall V1Q \in (2^{A-27a}).(\forall V2R \in (2^{A-27a}).((\forall V3x \in A.27a.((p (ap V2R V3x)) \Rightarrow ((p (ap V0P V3x)) \Rightarrow (p (ap V1Q V3x)))))) \Rightarrow ((p (ap (ap (c_2Ebool_2ERES_FORALL A.27a) V2R) V0P)) \Rightarrow (p (ap (ap (c_2Ebool_2ERES_FORALL A.27a) V2R) V1Q))))))))))$$