thm_2Erelation_2ERTC__RULES__RIGHT1 (TMT13iM3yd4E48HqURGMBRks9bo13CeQjS6)

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Definition 1 *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 2 *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 3 *We define* c_2Ebool_2ET *to be* $(ap\ (ap\ (\text{c\_2Emin\_2E\_3D}\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V1$

Definition 4 *We define* c_2Ebool_2E_21 *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ (ap\ (\text{c\_2Emin\_2E\_3D}\ (2^{A\_27}$

Definition 5 *We define* c_2Ebool_2E_2F_5C *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (\text{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V2t \in 2$

Definition 6 *We define* c_2Erelation_2ERTC *to be* $\lambda A\_27a : \iota.\lambda V0R \in ((2^{A\_27a})^{A\_27a}).\lambda V1a \in A\_27a.\lambda V2b$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0R \in ((2^{A\_27a})^{A\_27a}). (\forall V1a \in A\_27a.(\forall V2b \in A\_27a.((p\ (ap\ (ap\ (ap\ (\text{c\_2Erelation\_2ERTC}\ A\_27a)\ V0R)\ V1a)\ V2b)) \Leftrightarrow (\forall V3Q \in (2^{A\_27a}).(((p\ (ap\ V3Q\ V1a)) \wedge (\forall V4y \in A\_27a.(\forall V5z \in A\_27a.(((p\ (ap\ V3Q\ V4y)) \wedge (p\ (ap\ (ap\ V0R\ V4y)\ V5z))) \Rightarrow (p\ (ap\ V3Q\ V5z)))))) \Rightarrow (p\ (ap\ V3Q\ V2b)))))))) \tag{1}$$

Theorem 1

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0R \in ((2^{A\_27a})^{A\_27a}). ((\forall V1x \in A\_27a.(p\ (ap\ (ap\ (ap\ (\text{c\_2Erelation\_2ERTC}\ A\_27a)\ V0R)\ V1x)\ V1x))) \wedge (\forall V2x \in A\_27a.(\forall V3y \in A\_27a.(\forall V4z \in A\_27a.(((p\ (ap\ (ap\ (ap\ (\text{c\_2Erelation\_2ERTC}\ A\_27a)\ V0R)\ V2x)\ V3y)) \wedge (p\ (ap\ (ap\ V0R\ V3y)\ V4z))) \Rightarrow (p\ (ap\ (ap\ (ap\ (\text{c\_2Erelation\_2ERTC}\ A\_27a)\ V0R)\ V2x)\ V4z))))))))$$