

# thm\_2Eres\_\_quan\_2ERES\_\_ABSTRACT (TMS- BGP1ZCbvz594KLb88QJRKRpswYFiqCdr)

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Let  $c\_2Ebool\_2ERES\_ABSTRACT : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Ebool\_2ERES\_ABSTRACT\ A\_27a\ A\_27b \in (((A\_27b^{A\_27a})^{(A\_27b^{A\_27a})})^{(2^{A\_27a})}) \quad (1)$$

**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  $\lambda A\_27a : \iota.(\lambda V0x \in A\_27a.(\lambda V1f \in (2^{A\_27a}).(\lambda V1x \in V0x)))$

**Definition 3** We define  $c\_2Emin\_2E\_3D\_3D\_3E$  to be  $\lambda P \in 2.\lambda Q \in 2.inj\_o\ (P \Rightarrow Q)$  of type  $\iota$ .

**Definition 4** We define  $c\_2Ebool\_2ET$  to be  $(\lambda p\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V1x)$

**Definition 5** We define  $c\_2Ebool\_2E\_21$  to be  $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(\lambda V1p \in P.(c\_2Emin\_2E\_3D\ (2^{A\_27a})\ P\ p)))$

**Definition 6** We define  $c\_2Ebool\_2E\_2F\_5C$  to be  $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(c\_2Ebool\_2E\_21\ 2)\ (V0t1\ V1t2)))$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0p \in (2^{A\_27a}).(\forall V1m \in (A\_27b^{A\_27a}).(\forall V2x \in A\_27a.((p\ (ap\ (ap\ (c\_2Ebool\_2EIN\ A\_27a)\ V2x)\ V0p)) \Rightarrow ((ap\ (ap\ (ap\ (c\_2Ebool\_2ERES\_ABSTRACT\ A\_27a\ A\_27b)\ V0p)\ V1m)\ V2x) = (ap\ V1m\ V2x)))))) \wedge (\forall V3p \in (2^{A\_27a}).(\forall V4m1 \in (A\_27b^{A\_27a}).(\forall V5m2 \in (A\_27b^{A\_27a}).(\forall V6x \in A\_27a.((p\ (ap\ (ap\ (c\_2Ebool\_2EIN\ A\_27a)\ V6x)\ V3p)) \Rightarrow ((ap\ V4m1\ V6x) = (ap\ V5m2\ V6x)))))) \Rightarrow ((ap\ (ap\ (c\_2Ebool\_2ERES\_ABSTRACT\ A\_27a\ A\_27b)\ V3p)\ V4m1) = (ap\ (ap\ (c\_2Ebool\_2ERES\_ABSTRACT\ A\_27a\ A\_27b)\ V3p)\ V5m2)))))) \quad (2)$$

**Theorem 1**

$$\begin{aligned} & \forall A_{27a}.nonempty\ A_{27a} \Rightarrow \forall A_{27b}.nonempty\ A_{27b} \Rightarrow ( \\ & \quad \forall V0p \in (2^{A_{27a}}).(\forall V1m \in (A_{27b}^{A_{27a}}).(\forall V2x \in \\ & \quad A_{27a}.((p\ (ap\ (ap\ (c\_2Ebool\_2EIN\ A_{27a}\ V2x)\ V0p)) \Rightarrow ((ap\ (ap\ (ap \\ & \quad (c\_2Ebool\_2ERES\_ABSTRACT\ A_{27a}\ A_{27b})\ V0p)\ V1m)\ V2x) = (ap\ V1m \\ & \quad V2x)))))) \end{aligned}$$