

# thm\_2Equotient\_2EIN\_\_RESPECTS (TMcX- CTvWc1YaedUXJqXxXTFdPKuQBkmMYf6)

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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  $c\_2Ebool\_2ET$  to be  $(ap (ap (c\_2Emin\_2E\_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x)))$

**Definition 3** 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 4** We define  $c\_2Ecombin\_2EW$  to be  $\lambda A.27a : \iota. \lambda A.27b : \iota. (\lambda V0f \in ((A.27b^{A-27a})^{A-27a}). (\lambda V1x \in A.27b. (ap V1x V0f)))$

**Definition 5** We define  $c\_2Equotient\_2Erespects$  to be  $\lambda A.27a : \iota. \lambda A.27b : \iota. (c\_2Ecombin\_2EW A.27a A.27b)$

**Definition 6** We define  $c\_2Ebool\_2E\_21$  to be  $\lambda A.27a : \iota. (\lambda V0P \in (2^{A-27a}). (ap (ap (c\_2Emin\_2E\_3D (2^{A-27a}))))$

Assume the following.

$$True \tag{1}$$

Assume the following.

$$\forall A.27a. nonempty A.27a \Rightarrow (\forall V0t \in 2. ((\forall V1x \in A.27a. (p V0t)) \Leftrightarrow (p V0t))) \tag{2}$$

Assume the following.

$$\forall A.27a. nonempty A.27a \Rightarrow (\forall V0x \in A.27a. ((V0x = V0x) \Leftrightarrow True)) \tag{3}$$

Assume the following.

$$\forall A.27a. nonempty A.27a \Rightarrow (\forall V0P \in (2^{A-27a}). (\forall V1x \in A.27a. ((p (ap (ap (c\_2Ebool\_2EIN A.27a) V1x) V0P)) \Leftrightarrow (p (ap V0P V1x)))))) \tag{4}$$

Assume the following.

$$\forall A.27a. nonempty A.27a \Rightarrow (\forall V0R \in ((2^{A-27a})^{A-27a}). (\forall V1x \in A.27a. ((p (ap (ap (c\_2Equotient\_2Erespects A.27a 2) V0R) V1x)) \Leftrightarrow (p (ap (ap V0R V1x) V1x)))))) \tag{5}$$

**Theorem 1**

$$\forall A.27a. nonempty A.27a \Rightarrow (\forall V0R \in ((2^{A-27a})^{A-27a}). (\forall V1x \in A.27a. ((p (ap (ap (c\_2Ebool\_2EIN A.27a) V1x) (ap (c\_2Equotient\_2Erespects A.27a 2) V0R))) \Leftrightarrow (p (ap (ap V0R V1x) V1x))))))$$