

# thm\_2Equotient\_2EQUOTIENT\_REL (TMFo- HVDfe3yrMyJt22HmAoX27XmTF5GazVV)

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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  $\iota$ .

**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  $(ap (ap (c_2Emin_2E_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

**Definition 4** We define `c_2Ebool_2E_21` to be  $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap (ap (c_2Emin_2E_3D (2^{A_27a}))$

**Definition 5** We define `c_2Ebool_2E_2F_5C` to be  $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap (c_2Ebool_2E_21 2) (\lambda V2t \in 2$

**Definition 6** We define `c_2Equotient_2EQUOTIENT` to be  $\lambda A_27a : \iota.\lambda A_27b : \iota.\lambda V0R \in ((2^{A_27a})^{A_27a}).\lambda V$

**Theorem 1**

$$\begin{aligned} & \forall A_27a.nonempty\ A_27a \Rightarrow \forall A_27b.nonempty\ A_27b \Rightarrow ( \\ & \quad \forall V0R \in ((2^{A_27a})^{A_27a}).(\forall V1abs \in (A_27b)^{A_27a}). \\ & (\forall V2rep \in (A_27a)^{A_27b}).((p (ap (ap (ap (c_2Equotient_2EQUOTIENT \\ & \quad A_27a\ A_27b)\ V0R)\ V1abs)\ V2rep)) \Rightarrow (\forall V3r \in A_27a.(\forall V4s \in \\ & A_27a.((p (ap (ap (V0R\ V3r)\ V4s)) \Leftrightarrow ((p (ap (ap (V0R\ V3r)\ V3r)) \wedge ((p (ap \\ & \quad (ap (V0R\ V4s)\ V4s)) \wedge ((ap (V1abs\ V3r) = (ap (V1abs\ V4s)))))))))))))) \end{aligned}$$