

# thm\_2Equotient\_2EFUN\_\_REL\_\_MP (TMXWs- FExhhCoLMhqpWiYd3zowsvJT3zEsoc)

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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  $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap (c_2Ebool_2E_21 2) (\lambda V2t \in 2.V2t)))$

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

**Definition 7** We define `c_2Equotient_2E_3D_3D_3D_3E` to be  $\lambda A_27a : \iota.\lambda A_27b : \iota.\lambda V0R1 \in ((2^{A_27a})^{A_27a}).\lambda V$

**Theorem 1**

$$\begin{aligned} & \forall A_27a.nonempty A_27a \Rightarrow \forall A_27b.nonempty A_27b \Rightarrow \forall A_27c. \\ & \quad nonempty A_27c \Rightarrow \forall A_27d.nonempty A_27d \Rightarrow (\forall V0R1 \in ( \\ & \quad (2^{A_27a})^{A_27a}).(\forall V1abs1 \in (A_27c^{A_27a}).(\forall V2rep1 \in \\ & \quad (A_27a^{A_27c}).((p (ap (ap (ap (c_2Equotient_2EQUOTIENT A_27a A_27c) \\ & \quad V0R1) V1abs1) V2rep1)) \Rightarrow (\forall V3R2 \in ((2^{A_27b})^{A_27b}).(\forall V4abs2 \in \\ & \quad (A_27d^{A_27b}).(\forall V5rep2 \in (A_27b^{A_27d}).((p (ap (ap (ap (c_2Equotient_2EQUOTIENT \\ & \quad A_27b A_27d) V3R2) V4abs2) V5rep2)) \Rightarrow (\forall V6f \in (A_27b^{A_27a}). \\ & \quad (\forall V7g \in (A_27b^{A_27a}).(\forall V8x \in A_27a.(\forall V9y \in \\ & \quad A_27a.(((p (ap (ap (ap (ap (c_2Equotient_2E_3D_3D_3E A_27a \\ & \quad A_27b) V0R1) V3R2) V6f) V7g)) \wedge (p (ap (ap V0R1 V8x) V9y)))) \Rightarrow (p (ap ( \\ & \quad ap V3R2 (ap V6f V8x)) (ap V7g V9y)))))))))))))) \end{aligned}$$