

thm_2Epred__set_2EDFUNSET__applied
(TMJ8sXag6tk8Xzogbh7uqJKdgXF8XQNAKbS)

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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_2E_21` to be $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap (ap (c_2Emin_2E_3D (2^{A_27a}))$

Definition 4 We define `c_2Emarker_2ECong` to be $\lambda V0x \in 2.V0x$.

Definition 5 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 6 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 7 We define `c_2Epred__set_2EDFUNSET` to be $\lambda A_27a : \iota.\lambda A_27b : \iota.\lambda V0P \in (2^{A_27a}).\lambda V1Q \in (2^{A_27b}).$

Assume the following.

$$\begin{aligned} & \forall A_27a.nonempty A_27a \Rightarrow \forall A_27b.nonempty A_27b \Rightarrow (\\ & \quad \forall V0f \in (A_27b^{A_27a}).(\forall V1P \in (2^{A_27a}).(\forall V2Q \in \\ & \quad ((2^{A_27b})^{A_27a}).((p (ap (ap (c_2Ebool_2EIN (A_27b^{A_27a})) V0f) \\ & \quad (ap (ap (c_2Epred__set_2EDFUNSET A_27a A_27b) V1P) V2Q)))) \Leftrightarrow (\forall V3x \in \\ & \quad A_27a.((p (ap (ap (c_2Ebool_2EIN A_27a) V3x) V1P)) \Rightarrow (p (ap (ap (c_2Ebool_2EIN \\ & \quad A_27b) (ap V0f V3x)) (ap V2Q V3x)))))))))) \end{aligned} \tag{1}$$

Theorem 1

$$\begin{aligned} & \forall A_27a.nonempty A_27a \Rightarrow \forall A_27b.nonempty A_27b \Rightarrow (\\ & \quad \forall V0f \in (A_27b^{A_27a}).(\forall V1P \in (2^{A_27a}).(\forall V2Q \in \\ & \quad ((2^{A_27b})^{A_27a}).((p (ap (ap (ap (c_2Epred__set_2EDFUNSET A_27a \\ & \quad A_27b) V1P) V2Q) V0f)) \Leftrightarrow (\forall V3x \in A_27a.((p (ap (ap (c_2Ebool_2EIN \\ & \quad A_27a) V3x) V1P)) \Rightarrow (p (ap (ap (c_2Ebool_2EIN A_27b) (ap V0f V3x)) \\ & \quad (ap V2Q V3x)))))))))) \end{aligned}$$