

Definition 10 We define c_Ebool_2EF to be $(ap (c_Ebool_2E_21) 2) (\lambda V0t \in 2.V0t)$.

Definition 11 We define $c_Epred_set_2EMPTY$ to be $\lambda A_27a : \iota.(\lambda V0x \in A_27a.c_Ebool_2EF)$.

Definition 12 We define $c_Epred_set_2EFINITE$ to be $\lambda A_27a : \iota.\lambda V0s \in (2^{A_27a}).(ap (c_Ebool_2E_21) 2)$

Definition 13 We define $c_Ebool_2E_7E$ to be $(\lambda V0t \in 2.(ap (ap c_2Emin_2E_3D_3D_3E V0t) c_Ebool_2E_21))$

Definition 14 We define $c_2Emin_2E_40$ to be $\lambda A.\lambda P \in 2^A.\mathbf{if} (\exists x \in A.p (ap P x)) \mathbf{then} (the (\lambda x.x \in A \wedge p (ap P x)))$ of type $\iota \Rightarrow \iota$.

Definition 15 We define $c_Ebool_2E_3F$ to be $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap V0P (ap (c_2Emin_2E_40) A_27a)))$

Definition 16 We define $c_Epred_set_2ESURJ$ to be $\lambda A_27a : \iota.\lambda A_27b : \iota.\lambda V0f \in (A_27b^{A_27a}).\lambda V1s \in (2^{A_27a}).$

Definition 17 We define $c_Epred_set_2EINJ$ to be $\lambda A_27a : \iota.\lambda A_27b : \iota.\lambda V0f \in (A_27b^{A_27a}).\lambda V1s \in (2^{A_27a}).$

Definition 18 We define $c_Epred_set_2EBIJ$ to be $\lambda A_27a : \iota.\lambda A_27b : \iota.\lambda V0f \in (A_27b^{A_27a}).\lambda V1s \in (2^{A_27a}).$

Definition 19 We define $c_2Ecardinal_2Ecardeq$ to be $\lambda A_27a : \iota.\lambda A_27b : \iota.\lambda V0s1 \in (2^{A_27a}).\lambda V1s2 \in (2^{A_27a}).$

Assume the following.

$$\begin{aligned} & \forall A_27a.nonempty A_27a \Rightarrow (\forall V0x \in A_27a.(\forall V1s \in \\ & (2^{A_27a}).((p (ap (ap (c_2Ecardinal_2Ecardeq A_27a A_27a) (ap \\ & (ap (c_2Epred_set_2EINSERT A_27a) V0x) V1s)) V1s)) \Leftrightarrow ((p (ap (ap \\ & (c_Ebool_2EIN A_27a) V0x) V1s)) \vee (\neg (p (ap (c_2Epred_set_2EFINITE \\ & A_27a) V1s))))))) \end{aligned} \quad (4)$$

Theorem 1

$$\begin{aligned} & \forall A_27a.nonempty A_27a \Rightarrow (\forall V0x \in A_27a.(\forall V1s \in \\ & (2^{A_27a}).((\neg (p (ap (c_2Epred_set_2EFINITE A_27a) V1s)))) \Rightarrow (\\ & p (ap (ap (c_2Ecardinal_2Ecardeq A_27a A_27a) (ap (ap (c_2Epred_set_2EINSERT \\ & A_27a) V0x) V1s)) V1s)))) \end{aligned}$$