

thm_2Esemi_ring_2Emult_rotate
(TMcm463y6dLijsYJmDrQRiPosQTKhrcL7mY)

October 26, 2020

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 ι .

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_2E_2T` to be $(ap (ap (c_2Emin_2E_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

Let `ty_2Esemi_ring_2Esemi_ring` : $\iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty A0 \Rightarrow nonempty (ty_2Esemi_ring_2Esemi_ring A0) \quad (1)$$

Let `c_2Esemi_ring_2Esemi_ring_SRM` : $\iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A.27a.nonempty A.27a \Rightarrow c_2Esemi_ring_2Esemi_ring_SRM A.27a \in (A.27a^{(ty_2Esemi_ring_2Esemi_ring A.27a)}) \quad (2)$$

Let `c_2Esemi_ring_2Esemi_ring_SRM0` : $\iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A.27a.nonempty A.27a \Rightarrow c_2Esemi_ring_2Esemi_ring_SRM0 A.27a \in (A.27a^{(ty_2Esemi_ring_2Esemi_ring A.27a)}) \quad (3)$$

Let `c_2Esemi_ring_2Esemi_ring_SRM` : $\iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A.27a.nonempty A.27a \Rightarrow c_2Esemi_ring_2Esemi_ring_SRM A.27a \in (((A.27a^{A.27a})^{A.27a})^{(ty_2Esemi_ring_2Esemi_ring A.27a)}) \quad (4)$$

Let `c_2Esemi_ring_2Esemi_ring_SRP` : $\iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A.27a.nonempty A.27a \Rightarrow c_2Esemi_ring_2Esemi_ring_SRP A.27a \in (((A.27a^{A.27a})^{A.27a})^{(ty_2Esemi_ring_2Esemi_ring A.27a)}) \quad (5)$$

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 $c_Esemi_ring_2Eis_semi_ring$ to be $\lambda A_27a : \iota.\lambda V0r \in (ty_2Esemi_ring_2Esemi_ring$

Assume the following.

$$True \tag{6}$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0x \in A_27a. ((V0x = V0x) \Leftrightarrow True)) \tag{7}$$

Theorem 1

$$\begin{aligned} & \forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0r \in (ty_2Esemi_ring_2Esemi_ring \\ & \quad A_27a). ((p\ (ap\ (c_2Esemi_ring_2Eis_semi_ring\ A_27a)\ V0r)) \Rightarrow \\ & \quad (\forall V1m \in A_27a. (\forall V2n \in A_27a. (\forall V3p \in A_27a. (\\ & \quad (ap\ (ap\ (ap\ (c_2Esemi_ring_2Esemi_ring_SRM\ A_27a)\ V0r)\ (ap \\ & \quad (ap\ (ap\ (c_2Esemi_ring_2Esemi_ring_SRM\ A_27a)\ V0r)\ V1m)\ V2n)) \\ & \quad V3p) = (ap\ (ap\ (ap\ (c_2Esemi_ring_2Esemi_ring_SRM\ A_27a)\ V0r) \\ & \quad (ap\ (ap\ (ap\ (c_2Esemi_ring_2Esemi_ring_SRM\ A_27a)\ V0r)\ V2n) \\ & \quad V3p))\ V1m)))))) \end{aligned}$$