thm_2Emachine__ieee_2Efloat__to__fp64__fp64__to__float (TMdp3KkVHsKC71zgdtPzJTS41Nwy7yvRjmo)

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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_2Ecombin_2EK *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.(\lambda V0x \in A\_27a.(\lambda V1y \in A\_27b.V0x))$

Definition 3 *We define* c_2Ecombin_2ES *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda A\_27c : \iota.(\lambda V0f \in ((A\_27c^{A\_27b})^{A\_27a}$

Definition 4 *We define* c_2Ecombin_2EI *to be* $\lambda A_27a : \iota.(ap\ (ap\ ($c_2Ecombin_2ES $A\_27a\ (A\_27a^{A\_27a})\ A\_$

Definition 5 *We define* c_2Ebool_2ET *to be* $(ap\ (ap\ ($c_2Emin_2E_3D $(2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V$

Definition 6 *We define* c_2Epred__set_2EUNIV *to be* $\lambda A_27a : \iota.(\lambda V0x \in A_27a.c_2Ebool_2ET)$.

Definition 7 *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 8 *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 9 *We define* c_2Ebool_2E_21 *to be* $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap\ (ap\ ($c_2Emin_2E_3D $(2^{A\_27}$

Definition 10 *We define* c_2Ebool_2E_5C_2F *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ ($c_2Ebool_2E_21 $2)\ (\lambda V2t \in$

Definition 11 *We define* c_2Ebool_2E_2F_5C *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ ($c_2Ebool_2E_21 $2)\ (\lambda V2t \in$

Let $ty\_2Epair\_2Eprod : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty\_2Epair\_2Eprod\ A0\ A1) \tag{1}$$

Let $c\_2Epair\_2EABS\_\_prod : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2EABS\_\_prod\ A\_27a\ A\_27b \in ((ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)^{((2^{A\_27b})^{A\_27a})}) \tag{2}$$

Definition 12 *We define* c_2Epair_2E_2C *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0x \in A\_27a.\lambda V1y \in A\_27b.(ap\ (c\_2$

Let $c\_2Epred\_\_set\_2EGSPEC : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epred\_\_set\_2EGSPEC\ A\_27a\ A\_27b \in ((2^{A\_27a})^{((ty\_2Epair\_2Eprod\ A\_27a\ 2)^{A\_27b})}) \quad (3)$$

Definition 13 *We define* c_2Epred__set_2EINSERT *to be* $\lambda A\_27a : \iota.\lambda V0x \in A\_27a.\lambda V1s \in (2^{A\_27a}).(ap\ (c\_$

Definition 14 *We define* c_2Ebool_2EF *to be* $(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V0t \in 2.V0t))$.

Definition 15 *We define* c_2Epred__set_2EEMPTY *to be* $\lambda A\_27a : \iota.(\lambda V0x \in A\_27a.\mathsf{c\_2Ebool\_2EF})$.

Definition 16 *We define* c_2Epred__set_2EFINITE *to be* $\lambda A\_27a : \iota.\lambda V0s \in (2^{A\_27a}).(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ (2$

Let $c\_2Ebool\_2EARB : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Ebool\_2EARB\ A\_27a \in A\_27a \quad (4)$$

Let $ty\_2Ebinary\_\_ieee\_2Efloat : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty\_2Ebinary\_\_ieee\_2Efloat\ A0\ A1) \quad (5)$$

Let $ty\_2Efcp\_2Ecart : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty\_2Efcp\_2Ecart\ A0\ A1) \quad (6)$$

Let $c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\_\_fupd : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27t.nonempty\ A\_27t \Rightarrow \forall A\_27u.nonempty\ A\_27u \Rightarrow \forall A\_27u \ldots nonempty\ A\_27w \Rightarrow c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\_\_f \ldots A\_27t\ A\_27u\ A\_27w \in (((ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27u\ A\_27w)^{(ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w)})^{(\ldots} \quad (7)$$

Let $c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent\_\_fupd : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27t.nonempty\ A\_27t \Rightarrow \forall A\_27w.nonempty\ A\_27w \Rightarrow \forall A\_27x.\ nonempty\ A\_27x \Rightarrow c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent\_\_fupd\ A\_2 \ldots A\_27w\ A\_27x \in (((ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27x)^{(ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w)})^{((ty\_2Efc \ldots} \quad (8)$$

Let $ty\_2Eone\_2Eone : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Eone\_2Eone \quad (9)$$

Let $c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign\_\_fupd : \iota{\Rightarrow}\iota{\Rightarrow}\iota$ be given. Assume the following.

$$\forall A\_27t.nonempty\ A\_27t{\Rightarrow}\forall A\_27w.nonempty\ A\_27w{\Rightarrow}c\_2Ebinary\_\_ieee\_ \ldots A\_27t\ A\_27w \in (((ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w)^{(ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w)})^{((ty\_2Ef\ldots} \quad (10)$$

Let $ty\_2Efcp\_2Ebit0 : \iota{\Rightarrow}\iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0{\Rightarrow}nonempty\ (ty\_2Efcp\_2Ebit0\ A0) \quad (11)$$

Let $ty\_2Efcp\_2Ebit1 : \iota{\Rightarrow}\iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0{\Rightarrow}nonempty\ (ty\_2Efcp\_2Ebit1\ A0) \quad (12)$$

Let $c\_2Enum\_2EZERO\_\_REP : \iota$ be given. Assume the following.

$$c\_2Enum\_2EZERO\_\_REP \in omega \quad (13)$$

Let $ty\_2Enum\_2Enum : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Enum\_2Enum \quad (14)$$

Let $c\_2Enum\_2EABS\_\_num : \iota$ be given. Assume the following.

$$c\_2Enum\_2EABS\_\_num \in (ty\_2Enum\_2Enum^{omega}) \quad (15)$$

Definition 17 *We define* c_2Enum_2E0 *to be* $(ap\ c\_2Enum\_2EABS\_\_num\ c\_2Enum\_2EZERO\_\_REP)$.

Definition 18 *We define* c_2Earithmetic_2EZERO *to be* c_2Enum_2E0*.*

Let $c\_2Enum\_2EREP\_\_num : \iota$ be given. Assume the following.

$$c\_2Enum\_2EREP\_\_num \in (omega^{ty\_2Enum\_2Enum}) \quad (16)$$

Let $c\_2Enum\_2ESUC\_\_REP : \iota$ be given. Assume the following.

$$c\_2Enum\_2ESUC\_\_REP \in (omega^{omega}) \quad (17)$$

Definition 19 *We define* c_2Enum_2ESUC *to be* $\lambda V0m \in ty\_2Enum\_2Enum.(ap\ c\_2Enum\_2EABS\_\_num \ldots$

Let $c\_2Earithmetic\_2E\_2B : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2E\_2B \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \quad (18)$$

Definition 20 *We define* c_2Earithmetic_2EBIT2 *to be* $\lambda V0n \in ty\_2Enum\_2Enum.(ap\ (ap\ c\_2Earithmetic \ldots$

Definition 21 *We define* c_2Earithmetic_2EBIT1 *to be* $\lambda V0n \in ty\_2Enum\_2Enum.(ap\ (ap\ c\_2Earithmetic \ldots$

Definition 22 *We define* c_2Earithmetic_2ENUMERAL *to be* $\lambda V0x \in ty\_2Enum\_2Enum.V0x$.

Let $ty\_2Efcp\_2Efinite\_\_image : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty\_2Efcp\_2Efinite\_\_image\ A0) \quad (19)$$

Let $ty\_2Ebool\_2Eitself : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty\_2Ebool\_2Eitself\ A0) \quad (20)$$

Let $c\_2Ebool\_2Ethe\_\_value : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Ebool\_2Ethe\_\_value\ A\_27a \in (ty\_2Ebool\_2Eitself\ A\_27a) \quad (21)$$

Let $c\_2Efcp\_2Edimindex : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Efcp\_2Edimindex\ A\_27a \in (ty\_2Enum\_2Enum^{(ty\_2Ebool\_2Eitself\ A\_27a)}) \quad (22)$$

Definition 23 *We define* c_2Ebool_2E_7E *to be* $(\lambda V0t \in 2.(ap\ (ap$ c_2Emin_2E_3D_3D_3E $V0t)$ c_2Ebool_2E

Definition 24 *We define* c_2Emin_2E_40 *to be* $\lambda A.\lambda P \in 2^A.$**if** $(\exists x \in A.p\ (ap\ P\ x))$ **then** $(the\ (\lambda x.x \in A \wedge p$ *of type* $\iota \Rightarrow \iota$.

Definition 25 *We define* c_2Ebool_2E_3F *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ V0P\ (ap$ (c_2Emin_2E_40

Definition 26 *We define* c_2Eprim__rec_2E_3C *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2Enu$

Definition 27 *We define* c_2Ebool_2E_3F_21 *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ (ap$ c_2Ebool_2E_2F_5C

Definition 28 *We define* c_2Efcp_2Efinite__index *to be* $\lambda A\_27a : \iota.(ap$ (c_2Emin_2E_40 $(A\_27a^{ty\_2Enum\_2Enu}$

Let $c\_2Efcp\_2Edest\_\_cart : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Efcp\_2Edest\_\_cart\ A\_27a\ A\_27b \in ((A\_27a^{(ty\_2Efcp\_2Efinite\_\_image\ A\_27b)})^{(ty\_2Efcp\_2Ecart\ A\_27a\ A\_27b)}) \quad (23)$$

Definition 29 *We define* c_2Efcp_2Efcp__index *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0x \in (ty\_2Efcp\_2Ecart\ A\_27$

Let $c\_2Earithmetic\_2E\_2D : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2E\_2D \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \quad (24)$$

Definition 30 *We define* c_2Ebool_2ECOND *to be* $\lambda A\_27a : \iota.(\lambda V0t \in 2.(\lambda V1t1 \in A\_27a.(\lambda V2t2 \in A\_27a.($

Definition 31 *We define* c_2Earithmetic_2EMIN *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2E$

Definition 32 *We define* c_2Earithmetic_2E_3C_3D *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2$

Definition 33 *We define* c_2Efcp_2EFCP *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.(\lambda V0g \in (A\_27a^{ty\_2Enum\_2Enum}).(ap$

Definition 34 *We define* c_2Ewords_2Eword__bits *to be* $\lambda A\_27a : \iota.\lambda V0h \in ty\_2Enum\_2Enum.\lambda V1l \in ty\_2$

Let $c\_2Earithmetic\_2EEXP : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2EEXP \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{25}$$

Definition 35 *We define* c_2Ebit_2ESBIT *to be* $\lambda V0b \in 2.\lambda V1n \in ty_2Enum_2Enum.(ap\ (ap\ (ap\ ($c_2Eboo

Let $c\_2Esum\_\_num\_2ESUM : \iota$ be given. Assume the following.

$$c\_2Esum\_\_num\_2ESUM \in ((ty\_2Enum\_2Enum^{(ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})})^{ty\_2Enum\_2Enum}) \tag{26}$$

Definition 36 *We define* c_2Ewords_2Ew2n *to be* $\lambda A\_27a : \iota.\lambda V0w \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a).(ap\ (ap\ c$

Let $c\_2Earithmetic\_2EDIV : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2EDIV \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{27}$$

Definition 37 *We define* c_2Ebit_2EDIV__2EXP *to be* $\lambda V0x \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2En$

Let $c\_2Earithmetic\_2EMOD : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2EMOD \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{28}$$

Definition 38 *We define* c_2Ebit_2EMOD__2EXP *to be* $\lambda V0x \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2E$

Definition 39 *We define* c_2Ebit_2EBITS *to be* $\lambda V0h \in ty\_2Enum\_2Enum.\lambda V1l \in ty\_2Enum\_2Enum.\lambda V$

Definition 40 *We define* c_2Ebit_2EBIT *to be* $\lambda V0b \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2Enum.(ap$

Definition 41 *We define* c_2Ewords_2En2w *to be* $\lambda A_27a : \iota.\lambda V0n \in ty_2Enum_2Enum.(ap\ ($c_2Efcp_2EFC

Definition 42 *We define* c_2Ewords_2Ew2w *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0w \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a$

Definition 43 *We define* c_2Ecombin_2Eo *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda A\_27c : \iota.\lambda V0f \in (A\_27b^{A\_27c}).\lambda V1g$

Definition 44 *We define* c_2Ewords_2Eword__extract *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0h \in ty\_2Enum\_2Enum$

Definition 45 *We define* c_2Emachine__ieee_2Efp64__to__float *to be* $\lambda V0w \in (ty\_2Efcp\_2Ecart\ 2\ (ty\_2Efcp$

Let $c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27t.nonempty\ A\_27t \Rightarrow \forall A\_27w.nonempty\ A\_27w \Rightarrow c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\ A\_27t\ A\_27w \in ((ty\_2Efcp\_2Ecart\ 2\ A\_27t)^{(ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w)}) \tag{29}$$

Let $c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27t.nonempty\ A\_27t \Rightarrow \forall A\_27w.nonempty\ A\_27w \Rightarrow c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent\ A\_27t\ A\_27w \in ((ty\_2Efcp\_2Ecart\ 2\ A\_27w)^{(ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w)}) \quad (30)$$

Let $c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27t.nonempty\ A\_27t \Rightarrow \forall A\_27w.nonempty\ A\_27w \Rightarrow c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign\ A\_27t\ A\_27w \in ((ty\_2Efcp\_2Ecart\ 2\ ty\_2Eone\_2Eone)^{(ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w)}) \quad (31)$$

Let $ty\_2Esum\_2Esum : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty\_2Esum\_2Esum\ A0\ A1) \quad (32)$$

Definition 46 *We define* c_2Ewords_2Eword__lsl *to be* $\lambda A\_27a : \iota.\lambda V0w \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a).\lambda V1$

Definition 47 *We define* c_2Ewords_2Eword__or *to be* $\lambda A\_27a : \iota.\lambda V0v \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a).\lambda V1v$

Definition 48 *We define* c_2Ebool_2ELET *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.(\lambda V0f \in (A\_27b^{A\_27a}).(\lambda V1x \in A\_27$

Definition 49 *We define* c_2Ewords_2Eword__join *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0v \in (ty\_2Efcp\_2Ecart\ 2$

Definition 50 *We define* c_2Ewords_2Eword__concat *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda A\_27c : \iota.\lambda V0v \in (ty\_2Ef$

Definition 51 *We define* c_2Emachine__ieee_2Efloat__to__fp64 *to be* $\lambda V0x \in (ty\_2Ebinary\_\_ieee\_2Efloat\ (t$

Let $c\_2Earithmetic\_2EEVEN : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2EEVEN \in (2^{ty\_2Enum\_2Enum}) \quad (33)$$

Let $c\_2Earithmetic\_2EODD : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2EODD \in (2^{ty\_2Enum\_2Enum}) \quad (34)$$

Definition 52 *We define* c_2Earithmetic_2E_3E *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2En$

Definition 53 *We define* c_2Earithmetic_2E_3E_3D *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2$

Definition 54 *We define* c_2Eprim__rec_2EPRE *to be* $\lambda V0m \in ty\_2Enum\_2Enum.(ap\ (ap\ (ap$ (c_2Ebool_2E

Let $c\_2Earithmetic\_2E\_2A : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2E\_2A \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \quad (35)$$

Definition 55 *We define* c_2Enumeral_2EiiSUC *to be* $\lambda V0n \in ty\_2Enum\_2Enum.(ap$ c_2Enum_2ESUC $(ap$

Definition 56 *We define* c_2Enumeral_2EiZ *to be* $\lambda V0x \in ty\_2Enum\_2Enum.V0x$.

Let $c\_2Enumeral\_2EiSUB : \iota$ be given. Assume the following.

$$c\_2Enumeral\_2EiSUB \in (((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum})^{2}) \tag{36}$$

Definition 57 *We define* c_2Enumeral_2EiDUB *to be* $\lambda V0x \in ty\_2Enum\_2Enum.(ap\ (ap\ c\_2Earithmetic\_2$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ \mathsf{c\_2Enum\_2E0}) = V0m)) \tag{37}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V1n) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V1n)\ V0m)))) \tag{38}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ \mathsf{c\_2Enum\_2E0})\ V0n))) \tag{39}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(((ap\ (ap\ c\_2Earithmetic\_2E\_2D\ \mathsf{c\_2Enum\_2E0})\ V0m) = \mathsf{c\_2Enum\_2E0}) \wedge ((ap\ (ap\ c\_2Earithmetic\_2E\_2D\ V0m)\ \mathsf{c\_2Enum\_2E0}) = V0m))) \tag{40}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ \mathsf{c\_2Enum\_2E0})\ V0m) = \mathsf{c\_2Enum\_2E0}) \wedge (((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ \mathsf{c\_2Enum\_2E0}) = \mathsf{c\_2Enum\_2E0}) \wedge (((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})))\ V0m) = V0m) \wedge (((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))) = V0m) \wedge (((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0m))\ V1n) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ V1n))\ V1n)) \wedge ((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V1n)) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ (ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ V1n))))))))) \tag{41}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(\forall V2p \in ty\_2Enum\_2Enum.(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ V1n)) \wedge (p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V1n)\ V2p))) \Rightarrow (p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ V2p)))))) \tag{42}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ V0m))) \tag{43}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ \mathsf{c\_2Earithmetic\_2EZERO})))\ V0n) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0n)\ V0n))) \tag{44}$$

Assume the following.

$$(\forall V0c \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2D\ V0c)\ V0c) = \mathsf{c\_2Enum\_2E0})) \tag{45}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(\forall V2p \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V1n))\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V2p))) \Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V1n)\ V2p)))))) \tag{46}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.((\neg(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ V1n))) \Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V1n))\ V0m))))) \tag{47}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.((ap\ \mathsf{c\_2Enum\_2ESUC}\ V0n) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})))\ V0n))) \tag{48}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(\forall V2p \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2D\ V0m)\ V1n))\ V2p)) \Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V1n)\ V2p))))))) \tag{49}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.((ap\ (ap\ \mathsf{c\_2Earithmetic\_2EMIN}\ V0n)\ V0n) = V0n)) \tag{50}$$

Assume the following.

$$
\begin{array}{c}
\forall A\_27t.nonempty\ A\_27t \Rightarrow \forall A\_27u.nonempty\ A\_27u \Rightarrow \forall A\_27w. \\
nonempty\ A\_27w \Rightarrow \forall A\_27x.nonempty\ A\_27x \Rightarrow ((\forall V0f0 \in \\
((ty\_2Efcp\_2Ecart\ 2\ A\_27x)^{(ty\_2Efcp\_2Ecart\ 2\ A\_27w)}).(\forall V1f \in \\
(ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w).((ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign \\
A\_27t\ A\_27x)\ (ap\ (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent\_\_fupd \\
A\_27t\ A\_27w\ A\_27x)\ V0f0)\ V1f)) = (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign \\
A\_27t\ A\_27w)\ V1f)))) \wedge ((\forall V2f0 \in ((ty\_2Efcp\_2Ecart\ 2\ A\_27u)^{(ty\_2Efcp\_2Ecart\ 2\ A\_27t)}). \\
(\forall V3f \in (ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w).((ap\ (\\
c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign\ A\_27u\ A\_27w)\ (ap\ (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\_\_fu \\
A\_27t\ A\_27u\ A\_27w)\ V2f0)\ V3f)) = (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign \\
A\_27t\ A\_27w)\ V3f)))) \wedge ((\forall V4f0 \in ((ty\_2Efcp\_2Ecart\ 2\ ty\_2Eone\_2Eone)^{(ty\_2Efcp\_2Ecart\ 2\ ty\_2Eone\_2Eo} \\
(\forall V5f \in (ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w).((ap\ (\\
c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent\ A\_27t\ A\_27w)\ (ap\ (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign\_\_fupd \\
A\_27t\ A\_27w)\ V4f0)\ V5f)) = (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent \\
A\_27t\ A\_27w)\ V5f)))) \wedge ((\forall V6f0 \in ((ty\_2Efcp\_2Ecart\ 2\ A\_27u)^{(ty\_2Efcp\_2Ecart\ 2\ A\_27t)}). \\
(\forall V7f \in (ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w).((ap\ (\\
c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent\ A\_27u\ A\_27w)\ (ap\ (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\_\_ \\
A\_27t\ A\_27u\ A\_27w)\ V6f0)\ V7f)) = (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent \\
A\_27t\ A\_27w)\ V7f)))) \wedge ((\forall V8f0 \in ((ty\_2Efcp\_2Ecart\ 2\ ty\_2Eone\_2Eone)^{(ty\_2Efcp\_2Ecart\ 2\ ty\_2Eone\_2Eo} \\
(\forall V9f \in (ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w).((ap\ (\\
c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\ A\_27t\ A\_27w)\ (ap\ (ap\ (\\
c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign\_\_fupd\ A\_27t\ A\_27w)\ V8f0)\ V9f)) = \\
(ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\ A\_27t\ A\_27w)\ V9f)))) \wedge \\
((\forall V10f0 \in ((ty\_2Efcp\_2Ecart\ 2\ A\_27x)^{(ty\_2Efcp\_2Ecart\ 2\ A\_27w)}). \\
(\forall V11f \in (ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w).((ap \\
(c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\ A\_27t\ A\_27x)\ (ap\ (ap \\
(c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent\_\_fupd\ A\_27t\ A\_27w\ A\_27x) \\
V10f0)\ V11f)) = (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\ A\_27t \\
A\_27w)\ V11f)))) \wedge ((\forall V12f0 \in ((ty\_2Efcp\_2Ecart\ 2\ ty\_2Eone\_2Eone)^{(ty\_2Efcp\_2Ecart\ 2\ ty\_2Eone\_2Eone} \\
(\forall V13f \in (ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w).((ap \\
(c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign\ A\_27t\ A\_27w)\ (ap\ (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign\_\_fupd \\
A\_27t\ A\_27w)\ V12f0)\ V13f)) = (ap\ V12f0\ (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Sign \\
A\_27t\ A\_27w)\ V13f))))) \wedge ((\forall V14f0 \in ((ty\_2Efcp\_2Ecart\ 2 \\
A\_27x)^{(ty\_2Efcp\_2Ecart\ 2\ A\_27w)}).(\forall V15f \in (ty\_2Ebinary\_\_ieee\_2Efloat \\
A\_27t\ A\_27w).((ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent\ A\_27t \\
A\_27x)\ (ap\ (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent\_\_fupd\ A\_27t \\
A\_27w\ A\_27x)\ V14f0)\ V15f)) = (ap\ V14f0\ (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Exponent \\
A\_27t\ A\_27w)\ V15f))))) \wedge (\forall V16f0 \in ((ty\_2Efcp\_2Ecart\ 2\ A\_27u)^{(ty\_2Efcp\_2Ecart\ 2\ A\_27t)}). \\
(\forall V17f \in (ty\_2Ebinary\_\_ieee\_2Efloat\ A\_27t\ A\_27w).((ap \\
(c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\ A\_27u\ A\_27w)\ (ap\ (ap \\
(c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand\_\_fupd\ A\_27t\ A\_27u\ A\_27w) \\
V16f0)\ V17f)) = (ap\ V16f0\ (ap\ (c\_2Ebinary\_\_ieee\_2Efloat\_\_Significand \\
A\_27t\ A\_27w)\ V17f)))))))))))))
\end{array}
\tag{51}
$$

Assume the following.

$$True \tag{52}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0f \in (A\_27b^{A\_27a}).(\forall V1x \in A\_27a.((ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ELET}\ A\_27a\ A\_27b)\ V0f)\ V1x) = (ap\ V0f\ V1x)))) \tag{53}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0t \in 2.((\forall V1x \in A\_27a.(p\ V0t)) \Leftrightarrow (p\ V0t))) \tag{54}$$

Assume the following.

$$(\forall V0t \in 2.(((True \wedge (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge ((((p\ V0t) \wedge True) \Leftrightarrow (p\ V0t)) \wedge (((False \wedge (p\ V0t)) \Leftrightarrow False) \wedge ((((p\ V0t) \wedge False) \Leftrightarrow False) \wedge (((p\ V0t) \wedge (p\ V0t)) \Leftrightarrow (p\ V0t))))))) \tag{55}$$

Assume the following.

$$((\forall V0t \in 2.((\neg(\neg(p\ V0t))) \Leftrightarrow (p\ V0t))) \wedge (((\neg True) \Leftrightarrow False) \wedge ((\neg False) \Leftrightarrow True))) \tag{56}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.((V0x = V0x) \Leftrightarrow True)) \tag{57}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.(\forall V1y \in A\_27a.((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \tag{58}$$

Assume the following.

$$(\forall V0t \in 2.(((True \Leftrightarrow (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge ((((p\ V0t) \Leftrightarrow True) \Leftrightarrow (p\ V0t)) \wedge (((False \Leftrightarrow (p\ V0t)) \Leftrightarrow (\neg(p\ V0t))) \wedge (((p\ V0t) \Leftrightarrow False) \Leftrightarrow (\neg(p\ V0t))))))) \tag{59}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0t1 \in A\_27a.(\forall V1t2 \in A\_27a.(((ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ A\_27a)\ \mathsf{c\_2Ebool\_2ET})\ V0t1)\ V1t2) = V0t1) \wedge ((ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ A\_27a)\ \mathsf{c\_2Ebool\_2EF})\ V0t1)\ V1t2) = V1t2)))) \tag{60}$$

Assume the following.

$$(\forall V0t \in 2.(((p\ V0t) \Rightarrow False) \Leftrightarrow ((p\ V0t) \Leftrightarrow False))) \tag{61}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(\forall V2t3 \in 2.(((p\ V0t1)\Rightarrow ((p\ V1t2)\Rightarrow(p\ V2t3)))\Leftrightarrow(((p\ V0t1)\wedge(p\ V1t2))\Rightarrow(p\ V2t3)))))) \tag{62}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow\forall A\_27b.nonempty\ A\_27b\Rightarrow(\forall V0x \in A\_27a.(\forall V1y \in A\_27b.((ap\ (ap\ (\mathsf{c\_2Ecombin\_2EK}\ A\_27a\ A\_27b)\ V0x)\ V1y) = V0x))) \tag{63}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow(\forall V0x \in A\_27a.((ap\ (\mathsf{c\_2Ecombin\_2EI}\ A\_27a)\ V0x) = V0x)) \tag{64}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow\forall A\_27b.nonempty\ A\_27b\Rightarrow((ap\ (c\_2Efcp\_2Edimindex\ (ty\_2Esum\_2Esum\ A\_27a\ A\_27b))\ (c\_2Ebool\_2Ethe\_\_value\ (ty\_2Esum\_2Esum\ A\_27a\ A\_27b))) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ ty\_2Enum\_2Enum)\ (ap\ (ap\ \mathsf{c\_2Ebool\_2E\_2F\_5C}\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ A\_27a)\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ A\_27a)))\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ A\_27b)\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ A\_27b))))\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27a)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27a)))\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27b)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27b))))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})))) \tag{65}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow((ap\ (c\_2Efcp\_2Edimindex\ (ty\_2Efcp\_2Ebit0\ A\_27a))\ (c\_2Ebool\_2Ethe\_\_value\ (ty\_2Efcp\_2Ebit0\ A\_27a))) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ ty\_2Enum\_2Enum)\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ A\_27a)\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ A\_27a)))\ (ap\ (ap\ c\_2Earithmetic\_2E\_2A\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ \mathsf{c\_2Earithmetic\_2EZERO})))\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27a)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27a))))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})))) \tag{66}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow((p\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ (ty\_2Efcp\_2Ebit0\ A\_27a))\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ (ty\_2Efcp\_2Ebit0\ A\_27a))))\Leftrightarrow(p\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ A\_27a)\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ A\_27a)))) \tag{67}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow ((ap\ (c\_2Efcp\_2Edimindex\ (ty\_2Efcp\_2Ebit1\ A\_27a))\ (c\_2Ebool\_2Ethe\_\_value\ (ty\_2Efcp\_2Ebit1\ A\_27a))) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ ty\_2Enum\_2Enum)\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ A\_27a)\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ A\_27a)))\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ (ap\ c\_2Earithmetic\_2E\_2A\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ \mathsf{c\_2Earithmetic\_2EZERO})))\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27a)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27a))))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})))) \tag{68}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow ((p\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ (ty\_2Efcp\_2Ebit1\ A\_27a))\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ (ty\_2Efcp\_2Ebit1\ A\_27a)))) \Leftrightarrow (p\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ A\_27a)\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ A\_27a)))) \tag{69}$$

Assume the following.

$$((ap\ (c\_2Efcp\_2Edimindex\ ty\_2Eone\_2Eone)\ (c\_2Ebool\_2Ethe\_\_value\ ty\_2Eone\_2Eone)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))) \tag{70}$$

Assume the following.

$$(p\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ ty\_2Eone\_2Eone)\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Eone\_2Eone))) \tag{71}$$

Assume the following.

$$(((ap\ \mathsf{c\_2Enum\_2ESUC}\ \mathsf{c\_2Earithmetic\_2EZERO}) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})) \land ((\forall V0n \in ty\_2Enum\_2Enum.((ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))) \land (\forall V1n \in ty\_2Enum\_2Enum.((ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1n)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V1n)))))) \tag{72}$$

Assume the following.

$$((\forall V0n \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2B$$
$$\mathsf{c\_2Enum\_2E0})\ V0n) = V0n))\wedge((\forall V1n \in ty\_2Enum\_2Enum.((ap$$
$$(ap\ c\_2Earithmetic\_2E\_2B\ V1n)\ \mathsf{c\_2Enum\_2E0}) = V1n))\wedge((\forall V2n \in$$
$$ty\_2Enum\_2Enum.(\forall V3m \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2B$$
$$(ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V2n))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$V3m)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Enumeral\_2EiZ}\ (ap$$
$$(ap\ c\_2Earithmetic\_2E\_2B\ V2n)\ V3m))))))\wedge((\forall V4n \in ty\_2Enum\_2Enum.$$
$$((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ \mathsf{c\_2Enum\_2E0})\ V4n) = \mathsf{c\_2Enum\_2E0}))\wedge$$
$$((\forall V5n \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2A$$
$$V5n)\ \mathsf{c\_2Enum\_2E0}) = \mathsf{c\_2Enum\_2E0}))\wedge((\forall V6n \in ty\_2Enum\_2Enum.$$
$$(\forall V7m \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ ($$
$$ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V6n))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$V7m)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2A$$
$$V6n)\ V7m)))))\wedge((\forall V8n \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2D$$
$$\mathsf{c\_2Enum\_2E0})\ V8n) = \mathsf{c\_2Enum\_2E0}))\wedge((\forall V9n \in ty\_2Enum\_2Enum.$$
$$((ap\ (ap\ c\_2Earithmetic\_2E\_2D\ V9n)\ \mathsf{c\_2Enum\_2E0}) = V9n))\wedge((\forall V10n \in$$
$$ty\_2Enum\_2Enum.(\forall V11m \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2D$$
$$(ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V10n))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$V11m)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2D$$
$$V10n)\ V11m)))))\wedge((\forall V12n \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2EEXP$$
$$\mathsf{c\_2Enum\_2E0})\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}$$
$$V12n))) = \mathsf{c\_2Enum\_2E0}))\wedge((\forall V13n \in ty\_2Enum\_2Enum.((ap$$
$$(ap\ c\_2Earithmetic\_2EEXP\ \mathsf{c\_2Enum\_2E0})\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$(ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V13n))) = \mathsf{c\_2Enum\_2E0}))\wedge((\forall V14n \in$$
$$ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2EEXP\ V14n)\ \mathsf{c\_2Enum\_2E0}) =$$
$$(ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))))\wedge$$
$$((\forall V15n \in ty\_2Enum\_2Enum.(\forall V16m \in ty\_2Enum\_2Enum.$$
$$((ap\ (ap\ c\_2Earithmetic\_2EEXP\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V15n))$$
$$(ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V16m)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$(ap\ (ap\ c\_2Earithmetic\_2EEXP\ V15n)\ V16m)))))\wedge(((ap\ \mathsf{c\_2Enum\_2ESUC}$$
$$\mathsf{c\_2Enum\_2E0}) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}$$
$$\mathsf{c\_2Earithmetic\_2EZERO})))\wedge((\forall V17n \in ty\_2Enum\_2Enum.($$
$$(ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V17n)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$(ap\ \mathsf{c\_2Enum\_2ESUC}\ V17n))))\wedge(((ap\ \mathsf{c\_2Eprim\_\_rec\_2EPRE}\ \mathsf{c\_2Enum\_2E0}) =$$
$$\mathsf{c\_2Enum\_2E0})\wedge((\forall V18n \in ty\_2Enum\_2Enum.((ap\ \mathsf{c\_2Eprim\_\_rec\_2EPRE}$$
$$(ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V18n)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$(ap\ \mathsf{c\_2Eprim\_\_rec\_2EPRE}\ V18n))))\wedge((\forall V19n \in ty\_2Enum\_2Enum.$$
$$(((ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V19n) = \mathsf{c\_2Enum\_2E0})\Leftrightarrow(V19n = \mathsf{c\_2Earithmetic\_2EZERO})))\wedge$$
$$((\forall V20n \in ty\_2Enum\_2Enum.((\mathsf{c\_2Enum\_2E0} = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$V20n))\Leftrightarrow(V20n = \mathsf{c\_2Earithmetic\_2EZERO})))\wedge((\forall V21n \in ty\_2Enum\_2Enum.$$
$$(\forall V22m \in ty\_2Enum\_2Enum.(((ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$V21n) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V22m))\Leftrightarrow(V21n = V22m))))\wedge$$
$$((\forall V23n \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}$$
$$V23n)\ \mathsf{c\_2Enum\_2E0}))\Leftrightarrow False))\wedge((\forall V24n \in ty\_2Enum\_2Enum.$$
$$((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ \mathsf{c\_2Enum\_2E0})\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$V24n)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ \mathsf{c\_2Earithmetic\_2EZERO})$$
$$V24n))))\wedge((\forall V25n \in ty\_2Enum\_2Enum.(\forall V26m \in ty\_2Enum\_2Enum.$$
$$((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$V25n))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V26m)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}$$
$$V25n)\ V26m)))))\wedge((\forall V27n \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3E}$$
$$\mathsf{c\_2Enum\_2E0})\ V27n))\Leftrightarrow False))\wedge((\forall V28n \in ty\_2Enum\_2Enum.$$
$$((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3E}\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$V28n))\ \mathsf{c\_2Enum\_2E0}))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ \mathsf{c\_2Earithmetic\_2EZERO})$$
$$V28n))))\wedge((\forall V29n \in ty\_2Enum\_2Enum.(\forall V30m \in ty\_2Enum\_2Enum.$$
$$((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3E}\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$
$$V29n))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V30m)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}$$
$$V30m)\ V29n)))))\wedge((\forall V31n \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}$$
$$\mathsf{c\_2Enum\_2E0})\ V31n))\Leftrightarrow True))\wedge((\forall V32n \in ty\_2Enum\_2Enum.$$
$$((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(((ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ \mathsf{c\_2Earithmetic\_2EZERO}) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ \mathsf{c\_2Earithmetic\_2EZERO})) \wedge (((ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0n))) \wedge ((ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0n))))))) \tag{74}$$

Assume the following.

$$
\begin{gathered}
(\forall V0n \in \mathit{ty\_2Enum\_2Enum}.(\forall V1m \in \mathit{ty\_2Enum\_2Enum}.(\\
((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiZ}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ \mathsf{c\_2Earithmetic\_2EZERO}) \\
V0n)) = V0n)\wedge(((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiZ}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ \mathsf{c\_2Earithmetic\_2EZERO})) = V0n)\wedge(((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiZ}\ (\\
\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (\\
\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (\\
\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiZ}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge \\
(((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiZ}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
(\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiZ}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
(\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiZ}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
(\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ \mathsf{c\_2Earithmetic\_2EZERO}) \\
V0n)) = (\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ V0n))\wedge(((\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ \mathsf{c\_2Earithmetic\_2EZERO})) = (\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ V0n))\wedge(((\mathit{ap} \\
\mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
(\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
(\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
(\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
(\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge \\
(((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ \mathsf{c\_2Earithmetic\_2EZERO}) \\
V0n)) = (\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ V0n))\wedge(((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC} \\
(\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ \mathsf{c\_2Earithmetic\_2EZERO})) = (\\
\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ V0n))\wedge(((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (\mathit{ap}\ (\\
\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B}\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
V1m))) = (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (\mathit{ap}\ \mathsf{c\_2Enum\_2ESUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ V1m))))\wedge(((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B} \\
(\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = \\
(\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ V1m))))\wedge(((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B} \\
(\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = \\
(\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ V1m))))\wedge((\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B} \\
(\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = \\
(\mathit{ap}\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (\mathit{ap}\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ V1m)))))))))))))))))))))))
\end{gathered}
\tag{75}
$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(\forall V1m \in ty\_2Enum\_2Enum.(((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ \mathsf{c\_2Earithmetic\_2EZERO})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n)))\Leftrightarrow True)\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ \mathsf{c\_2Earithmetic\_2EZERO})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n)))\Leftrightarrow True)\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V0n)\ \mathsf{c\_2Earithmetic\_2EZERO}))\Leftrightarrow False)\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m)))\Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V0n)\ V1m)))\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m)))\Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V0n)\ V1m)))\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m)))\Leftrightarrow (\neg(p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V1m)\ V0n))))\wedge((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m)))\Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V0n)\ V1m)))))))))) \tag{76}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(\forall V1m \in ty\_2Enum\_2Enum.(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ \mathsf{c\_2Earithmetic\_2EZERO})\ V0n))\Leftrightarrow True)\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ \mathsf{c\_2Earithmetic\_2EZERO}))\Leftrightarrow False)\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ \mathsf{c\_2Earithmetic\_2EZERO}))\Leftrightarrow False)\wedge (((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0n)\ V1m)))\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0n)\ V1m)))\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m)))\Leftrightarrow(\neg(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V1m)\ V0n))))\wedge((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0n)\ V1m)))))))))) \tag{77}$$

Assume the following.

$$(\forall V0x \in ty\_2Enum\_2Enum.(\forall V1b \in 2.(\forall V2n \in ty\_2Enum\_2Enum.(\forall V3m \in ty\_2Enum\_2Enum.(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ V1b)\ \mathsf{c\_2Earithmetic\_2EZERO})\ V0x) = \mathsf{c\_2Earithmetic\_2EZERO})\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ V2n)\ \mathsf{c\_2Earithmetic\_2EZERO}) = V2n)\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V2n))\ \mathsf{c\_2Earithmetic\_2EZERO}) = (ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ V2n))\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V2n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V3m)) = (ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ (ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ V2n)\ V3m)))\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V2n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V3m)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ V2n)\ V3m)))\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V2n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V3m)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ V2n)\ V3m)))\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V2n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V3m)) = (ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ (ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ V2n)\ V3m)))\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V2n))\ \mathsf{c\_2Earithmetic\_2EZERO}) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V2n))\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V2n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V3m)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ V2n)\ V3m)))\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V2n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V3m)) = (ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ (ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ V2n)\ V3m)))\wedge(((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V2n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V3m)) = (ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ (ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ V2n)\ V3m)))\wedge((ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V2n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V3m)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2EF})\ V2n)\ V3m)))))))))))))))) \tag{78}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(\forall V1m \in ty\_2Enum\_2Enum.((ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2D\ V0n)\ V1m)) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ ty\_2Enum\_2Enum)\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V1m)\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ (ap\ (ap\ c\_2Enumeral\_2EiSUB\ \mathsf{c\_2Ebool\_2ET})\ V0n)\ V1m)))\ \mathsf{c\_2Enum\_2E0})))) \tag{79}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(((ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ V0n)))\wedge(((ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n)) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n)))\wedge((ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ \mathsf{c\_2Earithmetic\_2EZERO}) = \mathsf{c\_2Earithmetic\_2EZERO})))) \quad (80)$$

Assume the following.

$$(\forall V0x \in ty\_2Enum\_2Enum.(\forall V1y \in ty\_2Enum\_2Enum.(((ap\ (ap\ \mathsf{c\_2Earithmetic\_2EMIN}\ \mathsf{c\_2Enum\_2E0})\ V0x) = \mathsf{c\_2Enum\_2E0})\wedge(((ap\ (ap\ \mathsf{c\_2Earithmetic\_2EMIN}\ V0x)\ \mathsf{c\_2Enum\_2E0}) = \mathsf{c\_2Enum\_2E0})\wedge((ap\ (ap\ \mathsf{c\_2Earithmetic\_2EMIN}\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V0x))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V1y)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ ty\_2Enum\_2Enum)\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V0x)\ V1y))\ V0x)\ V1y))))))) \quad (81)$$

Assume the following.

$$(\forall V0i \in ty\_2Enum\_2Enum.((ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ V0i)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Enumeral\_2EiDUB}\ V0i)))) \quad (82)$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0a \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a).(\forall V1b \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a).((ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_or}\ A\_27a)\ V0a)\ V1b) = (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_or}\ A\_27a)\ V1b)\ V0a)))) \quad (83)$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0w \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a).((ap\ (\mathsf{c\_2Ewords\_2Ew2w}\ A\_27a\ A\_27b)\ V0w) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_extract}\ A\_27a\ A\_27b)\ (ap\ (ap\ c\_2Earithmetic\_2E\_2D\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27a)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27a)))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))))\ \mathsf{c\_2Enum\_2E0})\ V0w))) \quad (84)$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0h \in ty\_2Enum\_2Enum.(\forall V1l \in ty\_2Enum\_2Enum.(\forall V2w \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a).((ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_bits}\ A\_27a)\ V0h)\ V1l)\ V2w) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_extract}\ A\_27a\ A\_27a)\ V0h)\ V1l)\ V2w))))) \quad (85)$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow \forall A\_27c.\ nonempty\ A\_27c \Rightarrow (\forall V0w \in (ty\_2Efcp\_2Ecart\ 2\ A\_27c).(\forall V1h \in ty\_2Enum\_2Enum.(\forall V2l \in ty\_2Enum\_2Enum.(\forall V3m \in ty\_2Enum\_2Enum.(\forall V4n \in ty\_2Enum\_2Enum.((ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_extract}\ A\_27b\ A\_27a)\ V1h)\ V2l)\ (ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_extract}\ A\_27c\ A\_27b)\ V3m)\ V4n)\ V0w)) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_extract}\ A\_27c\ A\_27a)\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2EMIN}\ V3m)\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2EMIN}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V1h)\ V4n))\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2EMIN}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2D\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27c)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27c)))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))))\ (ap\ (ap\ c\_2Earithmetic\_2E\_2D\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27b)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27b)))\ V4n))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})))))))\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V2l)\ V4n))\ V0w))))))) \tag{86}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0w \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a).(\forall V1h \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2D\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27a)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27a)))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))))\ V1h)) \Rightarrow ((ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_bits}\ A\_27a)\ V1h)\ \mathsf{c\_2Enum\_2E0})\ V0w) = V0w)))) \tag{87}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0h \in ty\_2Enum\_2Enum.(\forall V1m \in ty\_2Enum\_2Enum.(\forall V2m\_27 \in ty\_2Enum\_2Enum.(\forall V3l \in ty\_2Enum\_2Enum.(\forall V4s \in ty\_2Enum\_2Enum. (\forall V5w \in (ty\_2Efcp\_2Ecart\ 2\ A\_27a).(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V3l)\ V1m)) \wedge ((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V2m\_27)\ V0h)) \wedge ((V2m\_27 = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V1m)\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})))) \wedge (V4s = (ap\ (ap\ c\_2Earithmetic\_2E\_2D\ V2m\_27)\ V3l))))) \Rightarrow ((ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_or}\ A\_27b)\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_lsl}\ A\_27b)\ (ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_extract}\ A\_27a\ A\_27b)\ V0h)\ V2m\_27)\ V5w))\ V4s))\ (ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_extract}\ A\_27a\ A\_27b)\ V1m)\ V3l)\ V5w)) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ewords\_2Eword\_\_extract}\ A\_27a\ A\_27b)\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2EMIN}\ V0h)\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2EMIN}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2D\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27b)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27b)))\ V3l))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))))\ (ap\ (ap\ c\_2Earithmetic\_2E\_2D\ (ap\ (c\_2Efcp\_2Edimindex\ A\_27a)\ (c\_2Ebool\_2Ethe\_\_value\ A\_27a)))\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))))))\ V3l)\ V5w))))))))) \tag{88}$$

Assume the following.

$$((ap\ (c\_2Efcp\_2Edimindex\ ty\_2Eone\_2Eone)\ (c\_2Ebool\_2Ethe\_\_value\ ty\_2Eone\_2Eone)) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))) \tag{89}$$

Assume the following.

$$((ap\ (c\_2Efcp\_2Edimindex\ (ty\_2Efcp\_2Ebit1\ (ty\_2Efcp\_2Ebit1\ (ty\_2Efcp\_2Ebit0\ ty\_2Eone\_2Eone))))\ (c\_2Ebool\_2Ethe\_\_value\ (ty\_2Efcp\_2Ebit1\ (ty\_2Efcp\_2Ebit1\ (ty\_2Efcp\_2Ebit0\ ty\_2Eone\_2Eone))))) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ \mathsf{c\_2Earithmetic\_2EZERO}))))) \tag{90}$$

Assume the following.

$$((ap\ (c\_2Efcp\_2Edimindex\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ ty\_2Eone\_2Eone)))))))\ (c\_2Ebool\_2Ethe\_\_value\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ ty\_2Eone\_2Eone)))))))) = (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))))))))) \tag{91}$$

Theorem 1

$$(\forall V0x \in (ty\_2Efcp\_2Ecart\ 2\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ (ty\_2Efcp\_2Ebit0\ ty\_2Eone\_2Eone))))))).((ap\ \mathsf{c\_2Emachine\_\_ieee\_2Efloat\_\_to\_\_fp64}\ (ap\ \mathsf{c\_2Emachine\_\_ieee\_2Efp64\_\_to\_\_float}\ V0x)) = V0x))$$