

thm_2Efloat_2EVALOF__DEFLOAT__FLOAT__ZEROSIGN__ROUNDING

(TMYsrxUnhBrrFAN-
oTrHAc7TXWwRFKU8AwFp)

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Definition 1 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** $(the (\lambda x.x \in A \wedge p of type \iota \Rightarrow \iota))$

Let $ty_2Eieee_2Erroundmode : \iota$ be given. Assume the following.

$$nonempty ty_2Eieee_2Erroundmode \quad (1)$$

Let $c_2Eieee_2ETo_nearest : \iota$ be given. Assume the following.

$$c_2Eieee_2ETo_nearest \in ty_2Eieee_2Erroundmode \quad (2)$$

Let $ty_2Enum_2Enum : \iota$ be given. Assume the following.

$$nonempty ty_2Enum_2Enum \quad (3)$$

Let $ty_2Epair_2Eprod : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty A0 \Rightarrow \forall A1.nonempty A1 \Rightarrow nonempty (ty_2Epair_2Eprod A0 A1) \quad (4)$$

Let $ty_2Erealax_2Ereal : \iota$ be given. Assume the following.

$$nonempty ty_2Erealax_2Ereal \quad (5)$$

Let $c_2Eieee_2Erround : \iota$ be given. Assume the following.

$$c_2Eieee_2Erround \in (((((ty_2Epair_2Eprod ty_2Enum_2Enum (ty_2Epair_2Eprod ty_2Enum_2Enum ty_2Enum_2Enum)))^{ty_2Erealax_2Ereal})^{ty_2Eieee_2Erroundmode})^{ty_2Epair_2Eprod ty_2Enum_2Enum}) \quad (6)$$

Let $c_2Enum_2EZERO_REP : \iota$ be given. Assume the following.

$$c_2Enum_2EZERO_REP \in omega \quad (7)$$

Let $c_2Enum_2EABS_num : \iota$ be given. Assume the following.

$$c_2Enum_2EABS_num \in (ty_2Enum_2Enum)^{omega} \quad (8)$$

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_2Enum_2E0 to be $(ap\ c_2Enum_2EABS_num\ c_2Enum_2EZERO_REP)$.

Definition 4 We define $c_2Earithmetic_2EZERO$ to be c_2Enum_2E0 .

Let $c_2Enum_2EREP_num : \iota$ be given. Assume the following.

$$c_2Enum_2EREP_num \in (\omega^{ty_2Enum_2Enum}) \quad (9)$$

Let $c_2Enum_2ESUC_REP : \iota$ be given. Assume the following.

$$c_2Enum_2ESUC_REP \in (\omega^\omega) \quad (10)$$

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

Definition 6 We define $c_2Ebool_2E_21$ to be $\lambda A.27a : \iota.(\lambda V0P \in (2^{A-27a}).(ap\ (ap\ (ap\ (c_2Emin_2E_3D\ (2^{A-27a}\ (V0P)))))))$

Definition 7 We define c_2Enum_2ESUC to be $\lambda V0m \in ty_2Enum_2Enum.(ap\ c_2Enum_2EABS_num\ ($

Let $c_2Earithmetic_2E_2B : \iota$ be given. Assume the following.

$$c_2Earithmetic_2E_2B \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \\ (11)$$

Definition 8 We define `c_2Earithmetic_2EBIT2` to be $\lambda V0n \in ty_2Enum_2Enum.(ap\ (ap\ c_2Earithmetic_2EBIT2\ n)\ V)$

Definition 9 We define $c_2Earithmetic_2EBIT1$ to be $\lambda V0n \in ty_2Enum_2Enum.(ap\ (ap\ c_2Earithmetic_2EBIT1\ n)\ V)$

Definition 10 We define `c_2Earithmetic_2ENUMERAL` to be $\lambda V0x \in ty_Enum_Enum. V0x$.

Definition 11 We define c to be $\lambda P \in 2.\lambda Q \in 2.inj_o (p \Rightarrow p Q)$ of type ι .

Definition 12 We define $c_2Ebbo_2E_2F_5C$ to be $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap(c_2Ebbo_2E_21 2))(\lambda V2t \in$

Let $c_2Epair_2EABS_prod : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_{_27a}.nonempty\ A_{_27a} \Rightarrow \forall A_{_27b}.nonempty\ A_{_27b} \Rightarrow c_{_2Epair_2EABS_prod}\ A_{_27a}\ A_{_27b} \in ((ty_{_2Epair_2Eprod}\ A_{_27a}\ A_{_27b})^{((2^{A_{_27b}})^{A_{_27a}})}) \quad (12)$$

Definition 13 We define $c_2Epair_2E_2C$ to be $\lambda A.27a : \iota.\lambda A.27b : \iota.\lambda V0x \in A.27a.\lambda V1y \in A.27b.(ap\,(c_2Epair\,(A, B), (x, y)))$

Definition 14 We define `c_2Eieee_2Efloat_format` to be `(ap (ap (c_2Epair_2E_2C ty_2Enum_2Enum ty_2Efloat)) (ap (c_2Efloat_2Efloat ty_2Efloat) (c_2Efloat_2Efloat ty_2Efloat)))`

Let $ty_2Eieee_2Efloat : \iota$ be given. Assume the following.

$$nonempty\ ty_2Eieee_2Efloat \quad (13)$$

Let $c_2Eieee_2Efloat : \iota$ be given. Assume the following.

$$c_2Eieee_2Efloat \in (ty_2Eieee_2Efloat^{(ty_2Epair_2Eprod\ ty_2Enum_2Enum\ (ty_2Epair_2Eprod\ ty_2Enum_2Enum))})^{ty_2Eieee_2Efloat} \quad (14)$$

Let $c_2Eieee_2Edefloat : \iota$ be given. Assume the following.

$$c_2Eieee_2Edefloat \in ((ty_2Epair_2Eprod\ ty_2Enum_2Enum\ (ty_2Epair_2Eprod\ ty_2Enum_2Enum\ ty_2Enum_2Enum))^{ty_2Eieee_2Efloat})^{ty_2Eieee_2Efloat} \quad (15)$$

Let $c_2Eieee_2Efraction : \iota$ be given. Assume the following.

$$c_2Eieee_2Efraction \in (ty_2Enum_2Enum^{(ty_2Epair_2Eprod\ ty_2Enum_2Enum\ (ty_2Epair_2Eprod\ ty_2Enum_2Enum))})^{ty_2Eieee_2Efraction} \quad (16)$$

Let $c_2Eieee_2Eexponent : \iota$ be given. Assume the following.

$$c_2Eieee_2Eexponent \in (ty_2Enum_2Enum^{(ty_2Epair_2Eprod\ ty_2Enum_2Enum\ (ty_2Epair_2Eprod\ ty_2Enum_2Enum))})^{ty_2Eieee_2Eexponent} \quad (17)$$

Let $c_2Eieee_2Efracwidth : \iota$ be given. Assume the following.

$$c_2Eieee_2Efracwidth \in (ty_2Enum_2Enum^{(ty_2Epair_2Eprod\ ty_2Enum_2Enum\ ty_2Enum_2Enum)})^{ty_2Eieee_2Efracwidth} \quad (18)$$

Let $c_2Eieee_2Eexpwidth : \iota$ be given. Assume the following.

$$c_2Eieee_2Eexpwidth \in (ty_2Enum_2Enum^{(ty_2Epair_2Eprod\ ty_2Enum_2Enum\ ty_2Enum_2Enum)})^{ty_2Eieee_2Eexpwidth} \quad (19)$$

Let $c_2Earithmetic_2E_2D : \iota$ be given. Assume the following.

$$c_2Earithmetic_2E_2D \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum})^{ty_2Earithmetic_2E_2D} \quad (20)$$

Let $c_2Earithmetic_2EEEXP : \iota$ be given. Assume the following.

$$c_2Earithmetic_2EEEXP \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum})^{ty_2Earithmetic_2EEEXP} \quad (21)$$

Definition 15 We define c_2Eieee_2Ebias to be $\lambda V0X \in (ty_2Epair_2Eprod\ ty_2Enum_2Enum\ ty_2Enum_2Enum)$

Let $c_2Eieee_2Evalof : \iota$ be given. Assume the following.

$$c_2Eieee_2Evalof \in ((ty_2Erealax_2Ereal^{(ty_2Epair_2Eprod\ ty_2Enum_2Enum\ (ty_2Epair_2Eprod\ ty_2Enum_2Enum))})^{ty_2Eieee_2Evalof})^{ty_2Erealax_2Ereal} \quad (22)$$

Definition 16 We define $c_2Eieee_2Eminus_zero$ to be $\lambda V0X \in (ty_2Epair_2Eprod\ ty_2Enum_2Enum\ ty_2Enum_2Enum)$

Definition 17 We define $c_2Eieee_2Eplus_zero$ to be $\lambda V0X \in (ty_2Epair_2Eprod\ ty_2Enum_2Enum\ ty_2Enum_2Enum)$

Definition 18 We define $c_2Eieee_2Eis_zero$ to be $\lambda V0X \in (ty_2Epair_2Eprod\ ty_2Enum_2Enum\ ty_2Enum_2Enum)$

Definition 19 We define c_2Ebool_2EF to be $(ap (c_2Ebool_2E_21 2) (\lambda V0t \in 2.V0t))$.

Definition 20 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 21 We define $c_2Eieee_2Ezerosign$ to be $\lambda V0X \in (ty_2Epair_2Eprod ty_2Enum_2Enum ty_2E$

Definition 22 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 23 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 24 We define $c_2Eprim_rec_2E_3C$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Definition 25 We define $c_2Earithmetic_2E_3E$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Definition 26 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 27 We define $c_2Earithmetic_2E_3E_3D$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Definition 28 We define $c_2Earithmetic_2E_3C_3D$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Definition 29 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.

$$c_2Earithmetic_2E_2A \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \quad (23)$$

Definition 30 We define $c_2Enumeral_2EiZ$ to be $\lambda V0x \in ty_2Enum_2Enum.V0x$.

Let $c_2Earithmetic_2EEVEN : \iota$ be given. Assume the following.

$$c_2Earithmetic_2EEVEN \in (2^{ty_2Enum_2Enum}) \quad (24)$$

Let $ty_2Ehreal_2Ehreal : \iota$ be given. Assume the following.

$$nonempty ty_2Ehreal_2Ehreal \quad (25)$$

Let $c_2Erealax_2Ereal_REP_CLASS : \iota$ be given. Assume the following.

$$c_2Erealax_2Ereal_REP_CLASS \in ((2^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal ty_2Ehreal_2Ehreal)})^{ty_2Erealax_2Ereal_REP_CLASS}) \quad (26)$$

Definition 31 We define $c_2Erealax_2Ereal_REP$ to be $\lambda V0a \in ty_2Erealax_2Ereal.(ap (c_2Emin_2E_40 (t$

Let $c_2Erealax_2Etreal_add : \iota$ be given. Assume the following.

$$c_2Erealax_2Etreal_add \in (((ty_2Epair_2Eprod ty_2Ehreal_2Ehreal ty_2Ehreal_2Ehreal)^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal)} \quad (27)$$

Let $c_2Erealax_2Etreal_eq : \iota$ be given. Assume the following.

$$c_2Erealax_2Etreal_eq \in ((2^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal)} \quad (28)$$

Let $c_2Erealax_2Ereal_ABS_CLASS : \iota$ be given. Assume the following.

$$c_2Erealax_2Ereal_ABS_CLASS \in (ty_2Erealax_2Ereal)^{(2^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal)}} \quad (29)$$

Definition 32 We define $c_2Erealax_2Ereal_ABS$ to be $\lambda V0r \in (ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal)$

Definition 33 We define $c_2Erealax_2Ereal_add$ to be $\lambda V0T1 \in ty_2Erealax_2Ereal.\lambda V1T2 \in ty_2Erealax_2Ereal$

Let $c_2Erealax_2Etreal_mul : \iota$ be given. Assume the following.

$$c_2Erealax_2Etreal_mul \in (((ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal_2Ehreal)}) \quad (30)$$

Definition 34 We define $c_2Erealax_2Ereal_mul$ to be $\lambda V0T1 \in ty_2Erealax_2Ereal.\lambda V1T2 \in ty_2Erealax_2Ereal$

Let $c_2Erealax_2Etreal_inv : \iota$ be given. Assume the following.

$$c_2Erealax_2Etreal_inv \in ((ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)}) \quad (31)$$

Definition 35 We define $c_2Erealax_2Ein$ to be $\lambda V0T1 \in ty_2Erealax_2Ereal.(ap\ c_2Erealax_2Ereal_ABS\ T1)$

Definition 36 We define $c_2Ereal_2E_2F$ to be $\lambda V0x \in ty_2Erealax_2Ereal.\lambda V1y \in ty_2Erealax_2Ereal.(ap\ c_2Erealax_2Ereal_ABS\ V0x\ V1y)$

Let $c_2Earithmetic_2EODD : \iota$ be given. Assume the following.

$$c_2Earithmetic_2EODD \in (2^{ty_2Enum_2Enum}) \quad (32)$$

Let $c_2Ereal_2Epow : \iota$ be given. Assume the following.

$$c_2Ereal_2Epow \in ((ty_2Erealax_2Ereal)^{ty_2Enum_2Enum})^{ty_2Erealax_2Ereal} \quad (33)$$

Let $c_2Erealax_2Etreal_neg : \iota$ be given. Assume the following.

$$c_2Erealax_2Etreal_neg \in ((ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)}) \quad (34)$$

Definition 37 We define $c_2Erealax_2Ereal_neg$ to be $\lambda V0T1 \in ty_2Erealax_2Ereal.(ap\ c_2Erealax_2Ereal_ABS\ T1)$

Let $c_2Ereal_2Ereal_of_num : \iota$ be given. Assume the following.

$$c_2Ereal_2Ereal_of_num \in (ty_2Erealax_2Ereal)^{ty_2Enum_2Enum} \quad (35)$$

Assume the following.

$$\begin{aligned} & (\forall V0n \in ty_2Enum_2Enum.(((ap\ (ap\ c_2Earithmetic_2EEXP \\ & (ap\ c_2Earithmetic_2ENUMERAL\ (ap\ c_2Earithmetic_2EBIT1\ c_2Earithmetic_2EZERO)))) \\ & V0n) = (ap\ c_2Earithmetic_2ENUMERAL\ (ap\ c_2Earithmetic_2EBIT1 \\ & c_2Earithmetic_2EZERO)))) \wedge ((ap\ (ap\ c_2Earithmetic_2EEXP\ V0n) \\ & (ap\ c_2Earithmetic_2ENUMERAL\ (ap\ c_2Earithmetic_2EBIT1\ c_2Earithmetic_2EZERO)))) = \\ & V0n))) \end{aligned} \quad (36)$$

Assume the following.

$$True \quad (37)$$

Assume the following.

$$(\forall V0t1 \in 2. (\forall V1t2 \in 2. (((p V0t1) \Rightarrow (p V1t2)) \Rightarrow (((p V1t2) \Rightarrow (p V0t1)) \Rightarrow ((p V0t1) \Leftrightarrow (p V1t2))))) \quad (38)$$

Assume the following.

$$(\forall V0t \in 2. (False \Rightarrow (p V0t))) \quad (39)$$

Assume the following.

$$(\forall V0t \in 2. ((p V0t) \vee (\neg(p V0t)))) \quad (40)$$

Assume the following.

$$(\forall V0t \in 2. (((True \Rightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Rightarrow True) \Leftrightarrow True) \wedge (((False \Rightarrow (p V0t)) \Leftrightarrow True) \wedge (((p V0t) \Rightarrow (p V0t)) \Leftrightarrow True) \wedge (((p V0t) \Rightarrow False) \Leftrightarrow (\neg(p V0t))))) \quad (41)$$

Assume the following.

$$((\forall V0t \in 2. ((\neg(\neg(p V0t)) \Leftrightarrow (p V0t))) \wedge (((\neg True) \Leftrightarrow False) \wedge ((\neg False) \Leftrightarrow True))) \quad (42)$$

Assume the following.

$$\forall A_27a.\text{nonempty } A_27a \Rightarrow (\forall V0x \in A_27a. ((V0x = V0x) \Leftrightarrow True)) \quad (43)$$

Assume the following.

$$\forall A_27a.\text{nonempty } A_27a \Rightarrow (\forall V0x \in A_27a. (\forall V1y \in A_27a. ((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \quad (44)$$

Assume the following.

$$(\forall V0t \in 2. (((True \Leftrightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Leftrightarrow True) \Leftrightarrow (p V0t)) \wedge (((False \Leftrightarrow (p V0t)) \Leftrightarrow (\neg(p V0t))) \wedge (((p V0t) \Leftrightarrow False) \Leftrightarrow (\neg(p V0t)))))) \quad (45)$$

Assume the following.

$$\begin{aligned} & \forall A_27a.\text{nonempty } A_27a \Rightarrow (\forall V0t1 \in A_27a. (\forall V1t2 \in A_27a. ((ap (ap (ap (c_2Ebool_2ECOND A_27a) c_2Ebool_2ET) V0t1) \\ & V1t2) = V0t1) \wedge ((ap (ap (ap (c_2Ebool_2ECOND A_27a) c_2Ebool_2EF) V0t1) V1t2) = V1t2)))) \end{aligned} \quad (46)$$

Assume the following.

$$(\forall V0t1 \in 2. (\forall V1t2 \in 2. (\forall V2t3 \in 2. (((p V0t1) \Rightarrow ((p V1t2) \Rightarrow (p V2t3))) \Leftrightarrow (((p V0t1) \wedge (p V1t2)) \Rightarrow (p V2t3)))))) \quad (47)$$

Assume the following.

$$\begin{aligned} & \forall A_27a.\text{nonempty } A_27a \Rightarrow (\forall V0P \in 2. (\forall V1Q \in 2. \\ & (\forall V2x \in A_27a. (\forall V3x_27 \in A_27a. (\forall V4y \in A_27a. \\ & (\forall V5y_27 \in A_27a. (((p V0P) \Leftrightarrow (p V1Q)) \wedge (((p V1Q) \Rightarrow (V2x = V3x_27)) \wedge \\ & ((\neg(p V1Q)) \Rightarrow (V4y = V5y_27)))) \Rightarrow ((ap (ap (ap (c_2Ebool_2ECOND A_27a) \\ & V0P) V2x) V4y) = (ap (ap (ap (c_2Ebool_2ECOND A_27a) V1Q) V3x_27) \\ & V5y_27)))))))))) \end{aligned} \quad (48)$$

Assume the following.

$$\begin{aligned} & \forall A_27a.\text{nonempty } A_27a \Rightarrow ((\forall V0t1 \in A_27a. (\forall V1t2 \in \\ & A_27a. ((ap (ap (ap (c_2Ebool_2ECOND A_27a) c_2Ebool_2ET) V0t1) \\ & V1t2) = V0t1))) \wedge (\forall V2t1 \in A_27a. (\forall V3t2 \in A_27a. ((ap \\ & (ap (ap (c_2Ebool_2ECOND A_27a) c_2Ebool_2EF) V2t1) V3t2) = V3t2)))))) \end{aligned} \quad (49)$$

Assume the following.

$$\begin{aligned} & (\forall V0x \in ty_2Erealax_2Ereal. (\forall V1b \in ty_2Enum_2Enum. \\ & ((ap c_2Eieee_2Edefloat (ap c_2Eieee_2Effloat (ap (ap (ap c_2Eieee_2Ezerosign \\ & c_2Eieee_2Effloat_format) V1b) (ap (ap (ap c_2Eieee_2Eround c_2Eieee_2Effloat_format) \\ & c_2Eieee_2ETo_nearest) V0x)))) = (ap (ap (ap c_2Eieee_2Ezerosign \\ & c_2Eieee_2Effloat_format) V1b) (ap (ap (ap c_2Eieee_2Eround c_2Eieee_2Effloat_format) \\ & c_2Eieee_2ETo_nearest) V0x)))))) \end{aligned} \quad (50)$$

Assume the following.

$$\begin{aligned} & (\forall V0s \in ty_2Enum_2Enum. (\forall V1e \in ty_2Enum_2Enum. (\\ & \forall V2f \in ty_2Enum_2Enum. ((ap c_2Eieee_2Eexponent (ap (ap \\ & (c_2Epair_2E_2C ty_2Enum_2Enum (ty_2Epair_2Eprod ty_2Enum_2Enum \\ & ty_2Enum_2Enum)) V0s) (ap (ap (c_2Epair_2E_2C ty_2Enum_2Enum \\ & ty_2Enum_2Enum) V1e) V2f))) = V1e)))) \end{aligned} \quad (51)$$

Assume the following.

$$\begin{aligned} & (\forall V0s \in ty_2Enum_2Enum. (\forall V1e \in ty_2Enum_2Enum. (\\ & \forall V2f \in ty_2Enum_2Enum. ((ap c_2Eieee_2Efraction (ap (ap \\ & (c_2Epair_2E_2C ty_2Enum_2Enum (ty_2Epair_2Eprod ty_2Enum_2Enum \\ & ty_2Enum_2Enum)) V0s) (ap (ap (c_2Epair_2E_2C ty_2Enum_2Enum \\ & ty_2Enum_2Enum) V1e) V2f))) = V2f)))) \end{aligned} \quad (52)$$

Assume the following.

$$\begin{aligned}
& (\forall V0X \in (ty_2Epair_2Eprod\ ty_2Enum_2Enum\ ty_2Enum_2Enum). \\
& \quad (\forall V1s \in ty_2Enum_2Enum.(\forall V2e \in ty_2Enum_2Enum. \\
& \quad \quad (\forall V3f \in ty_2Enum_2Enum.((ap\ (ap\ c_2Eieee_2Evalof\ V0X)\ (ap \\
& \quad \quad \quad (ap\ (c_2Epair_2E_2C\ ty_2Enum_2Enum\ (ty_2Epair_2Eprod\ ty_2Enum_2Enum \\
& \quad \quad \quad \quad ty_2Enum_2Enum))\ V1s)\ (ap\ (ap\ (c_2Epair_2E_2C\ ty_2Enum_2Enum \\
& \quad \quad \quad \quad ty_2Enum_2Enum))\ V2e)\ V3f))) = (ap\ (ap\ (ap\ (c_2Ebool_2ECOND\ ty_2Erealax_2Ereal \\
& \quad \quad \quad \quad (ap\ (ap\ (c_2Emin_2E_3D\ ty_2Enum_2Enum)\ V2e)\ c_2Enum_2E0))\ (ap \\
& \quad \quad \quad \quad (ap\ c_2Erealax_2Ereal_mul\ (ap\ (ap\ c_2Erealax_2Ereal_mul\ (ap \\
& \quad \quad \quad \quad (ap\ c_2Ereal_2Epow\ (ap\ c_2Erealax_2Ereal_neg\ (ap\ c_2Ereal_2Ereal_of_num \\
& \quad \quad \quad \quad (ap\ c_2Earithmetic_2ENUMERAL\ (ap\ c_2Earithmetic_2EBIT1\ c_2Earithmetic_2EZERO)))))) \\
& \quad \quad \quad \quad V1s))\ (ap\ (ap\ c_2Ereal_2E_2F\ (ap\ c_2Ereal_2Ereal_of_num\ (ap \\
& \quad \quad \quad \quad c_2Earithmetic_2ENUMERAL\ (ap\ c_2Earithmetic_2EBIT2\ c_2Earithmetic_2EZERO)))))) \\
& \quad \quad \quad \quad (ap\ (ap\ c_2Ereal_2Epow\ (ap\ c_2Ereal_2Ereal_of_num\ (ap\ c_2Earithmetic_2ENUMERAL \\
& \quad \quad \quad \quad (ap\ c_2Earithmic_2EBIT2\ c_2Earithmetic_2EZERO))))\ (ap\ c_2Eieee_2Ebias \\
& \quad \quad \quad \quad V0X))))\ (ap\ (ap\ c_2Ereal_2E_2F\ (ap\ c_2Ereal_2Ereal_of_num \\
& \quad \quad \quad \quad V3f))\ (ap\ (ap\ c_2Ereal_2Epow\ (ap\ c_2Ereal_2Ereal_of_num\ (ap \\
& \quad \quad \quad \quad c_2Earithmetic_2ENUMERAL\ (ap\ c_2Earithmetic_2EBIT2\ c_2Earithmetic_2EZERO)))) \\
& \quad \quad \quad \quad (ap\ c_2Eieee_2Efracwidth\ V0X))))\ (ap\ (ap\ c_2Erealax_2Ereal_mul \\
& \quad \quad \quad \quad (ap\ (ap\ c_2Erealax_2Ereal_mul\ (ap\ (ap\ c_2Ereal_2Epow\ (ap\ c_2Erealax_2Ereal_neg \\
& \quad \quad \quad \quad (ap\ c_2Ereal_2Ereal_of_num\ (ap\ c_2Earithmetic_2ENUMERAL \\
& \quad \quad \quad \quad (ap\ c_2Earithmetic_2EBIT1\ c_2Earithmetic_2EZERO))))))\ V1s))\ (\\
& \quad \quad \quad \quad ap\ (ap\ c_2Ereal_2E_2F\ (ap\ (ap\ c_2Ereal_2Epow\ (ap\ c_2Ereal_2Ereal_of_num \\
& \quad \quad \quad \quad (ap\ c_2Earithmetic_2ENUMERAL\ (ap\ c_2Earithmetic_2EBIT2\ c_2Earithmetic_2EZERO)))) \\
& \quad \quad \quad \quad V2e))\ (ap\ (ap\ c_2Ereal_2Epow\ (ap\ c_2Ereal_2Ereal_of_num\ (ap \\
& \quad \quad \quad \quad c_2Earithmetic_2ENUMERAL\ (ap\ c_2Earithmetic_2EBIT2\ c_2Earithmetic_2EZERO)))) \\
& \quad \quad \quad \quad (ap\ c_2Eieee_2Ebias\ V0X))))\ (ap\ (ap\ c_2Erealax_2Ereal_add\ (\\
& \quad \quad \quad \quad ap\ c_2Ereal_2Ereal_of_num\ (ap\ c_2Earithmetic_2ENUMERAL\ (ap \\
& \quad \quad \quad \quad c_2Earithmetic_2EBIT1\ c_2Earithmetic_2EZERO))))\ (ap\ (ap\ c_2Ereal_2E_2F \\
& \quad \quad \quad \quad (ap\ c_2Ereal_2Ereal_of_num\ V3f))\ (ap\ (ap\ c_2Ereal_2Epow\ (ap \\
& \quad \quad \quad \quad c_2Ereal_2Ereal_of_num\ (ap\ c_2Earithmetic_2ENUMERAL\ (ap\ c_2Earithmetic_2EBIT2 \\
& \quad \quad \quad \quad c_2Earithmetic_2EZERO))))\ (ap\ c_2Eieee_2Efracwidth\ V0X)))))))))) \\
& \quad \quad \quad \quad (53)
\end{aligned}$$

Assume the following.

$((\forall V0n \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2E_2B c_2Enum_2E0) V0n) = V0n)) \wedge ((\forall V1n \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2E_2B V1n) c_2Enum_2E0) = V1n)) \wedge ((\forall V2n \in ty_2Enum_2Enum.(\forall V3m \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2E_2B ap c_2Earithmetic_2ENUMERAL V2n)) (ap c_2Earithmetic_2ENUMERAL V3m)) = (ap c_2Earithmetic_2ENUMERAL (ap c_2Enum_2EiZ (ap (ap c_2Earithmetic_2E_2B V2n) V3m))))))) \wedge ((\forall V4n \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2E_2A c_2Enum_2E0) V4n) = c_2Enum_2E0)) \wedge ((\forall V5n \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2E_2A V5n) c_2Enum_2E0) = c_2Enum_2E0)) \wedge ((\forall V6n \in ty_2Enum_2Enum.((\forall V7m \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2E_2A (ap c_2Earithmetic_2ENUMERAL V7m)) (ap c_2Earithmetic_2ENUMERAL V7m)) = (ap c_2Earithmetic_2ENUMERAL (ap (ap c_2Earithmetic_2E_2A V6n) V7m))))))) \wedge ((\forall V8n \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2E_2D c_2Enum_2E0) V8n) = c_2Enum_2E0)) \wedge ((\forall V9n \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2E_2D V9n) c_2Enum_2E0) = V9n)) \wedge ((\forall V10n \in ty_2Enum_2Enum.(\forall V11m \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2E_2D (ap c_2Earithmetic_2ENUMERAL V10n)) (ap c_2Earithmetic_2ENUMERAL V11m)) = (ap c_2Earithmetic_2ENUMERAL (ap (ap c_2Earithmetic_2E_2D V10n) V11m))))))) \wedge ((\forall V12n \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2EEEXP c_2Enum_2E0) (ap c_2Earithmetic_2ENUMERAL (ap c_2Earithmetic_2EBIT1 V12n))) = c_2Enum_2E0)) \wedge ((\forall V13n \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2EEEXP c_2Enum_2E0) (ap c_2Earithmetic_2ENUMERAL (ap c_2Earithmetic_2EBIT2 V13n))) = c_2Enum_2E0)) \wedge ((\forall V14n \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2EEEXP V14n) c_2Enum_2E0) = (ap c_2Earithmetic_2ENUMERAL (ap c_2Earithmetic_2EBIT1 c_2Earithmetic_2EZERO))))))) \wedge ((\forall V15n \in ty_2Enum_2Enum.(\forall V16m \in ty_2Enum_2Enum.((ap (ap c_2Earithmetic_2EEEXP (ap c_2Earithmetic_2ENUMERAL V15n)) (ap c_2Earithmetic_2ENUMERAL V16m)) = (ap c_2Earithmetic_2ENUMERAL (ap (ap c_2Earithmetic_2EEEXP V15n) V16m))))))) \wedge (((ap c_2Enum_2ESUC c_2Enum_2E0) = (ap c_2Earithmetic_2ENUMERAL (ap c_2Earithmetic_2EBIT1 c_2Earithmetic_2EZERO)))) \wedge ((\forall V17n \in ty_2Enum_2Enum.((ap c_2Enum_2ESUC (ap c_2Earithmetic_2ENUMERAL V17n)) = (ap c_2Earithmetic_2ENUMERAL (ap c_2Enum_2ESUC V17n))))))) \wedge (((ap c_2Eprim_rec_2EPRE c_2Enum_2E0) = c_2Enum_2E0) \wedge ((\forall V18n \in ty_2Enum_2Enum.((ap c_2Eprim_rec_2EPRE (ap c_2Earithmetic_2ENUMERAL V18n)) = (ap c_2Earithmetic_2ENUMERAL (ap c_2Eprim_rec_2EPRE V18n))))))) \wedge ((\forall V19n \in ty_2Enum_2Enum.(((ap c_2Earithmetic_2ENUMERAL V19n) = c_2Enum_2E0) \Leftrightarrow (V19n = c_2Earithmetic_2EZERO))) \wedge ((\forall V20n \in ty_2Enum_2Enum.((c_2Enum_2E0 = (ap c_2Earithmetic_2ENUMERAL V20n)) \Leftrightarrow (V20n = c_2Earithmetic_2EZERO))) \wedge ((\forall V21n \in ty_2Enum_2Enum.((\forall V22m \in ty_2Enum_2Enum.(((ap c_2Earithmetic_2ENUMERAL V21n) = (ap c_2Earithmetic_2ENUMERAL V22m)) \Leftrightarrow (V21n = V22m))))))) \wedge ((\forall V23n \in ty_2Enum_2Enum.((p (ap (ap c_2Eprim_rec_2E_3C c_2Enum_2E0) (ap c_2Earithmetic_2ENUMERAL V23n)) \Leftrightarrow False))) \wedge ((\forall V24n \in ty_2Enum_2Enum.((p (ap (ap c_2Eprim_rec_2E_3C c_2Enum_2E0) (ap c_2Earithmetic_2ENUMERAL V24n)) \Leftrightarrow (p (ap (ap c_2Eprim_rec_2E_3C c_2Earithmetic_2EZERO) V24n)))) \wedge ((\forall V25n \in ty_2Enum_2Enum.((\forall V26m \in ty_2Enum_2Enum.((p (ap (ap c_2Eprim_rec_2E_3C c_2Enum_2E0) (ap c_2Earithmetic_2ENUMERAL V25n)) (ap c_2Earithmetic_2ENUMERAL V26m)) \Leftrightarrow (p (ap (ap c_2Eprim_rec_2E_3C c_2Enum_2E0) (ap c_2Earithmetic_2ENUMERAL V25n) V26m))))))) \wedge ((\forall V27n \in ty_2Enum_2Enum.((p (ap (ap c_2Earithmetic_2E_3E c_2Enum_2E0) V27n)) \Leftrightarrow False))) \wedge ((\forall V28n \in ty_2Enum_2Enum.((p (ap (ap c_2Earithmetic_2E_3E (ap c_2Earithmetic_2ENUMERAL V28n)) c_2Enum_2E0) \Leftrightarrow (p (ap (ap c_2Eprim_rec_2E_3C c_2Earithmetic_2EZERO) V28n)))) \wedge ((\forall V29n \in ty_2Enum_2Enum.((\forall V30m \in ty_2Enum_2Enum.((p (ap (ap c_2Earithmetic_2E_3E c_2Enum_2E0) (ap c_2Earithmetic_2ENUMERAL V29n)) (ap c_2Earithmetic_2ENUMERAL V30m)) \Leftrightarrow (p (ap (ap c_2Eprim_rec_2E_3C c_2Enum_2E0) (ap c_2Earithmetic_2ENUMERAL V29n))))))) \wedge ((\forall V31n \in ty_2Enum_2Enum.((p (ap (ap c_2Earithmetic_2E_3D c_2Enum_2E0) V31n)) \Leftrightarrow True))) \wedge ((\forall V32n \in ty_2Enum_2Enum.((p (ap (ap c_2Earithmetic_2E_3D c_2Enum_2E0) V32n)) \Leftrightarrow False))) \wedge ((\forall V33n \in ty_2Enum_2Enum.((p (ap (ap c_2Earithmetic_2E_3D c_2Enum_2E0) V33n)) \Leftrightarrow True))) \wedge ((\forall V34n \in ty_2Enum_2Enum.((p (ap (ap c_2Earithmetic_2E_3D c_2Enum_2E0) V34n)) \Leftrightarrow False)))$

Assume the following.

$$\begin{aligned}
 (\forall V0n \in ty_2Enum_2Enum. ((p (ap c_2Earithmetic_2EEVEN c_2Earithmetic_2EZERO)) \wedge \\
 ((p (ap c_2Earithmetic_2EEVEN (ap c_2Earithmetic_2EBIT2 V0n))) \wedge \\
 ((\neg(p (ap c_2Earithmetic_2EEVEN (ap c_2Earithmetic_2EBIT1 V0n)))) \wedge \\
 ((\neg(p (ap c_2Earithmetic_2EODD c_2Earithmetic_2EZERO))) \wedge \\
 (\neg(p (ap c_2Earithmetic_2EODD (ap c_2Earithmetic_2EBIT2 V0n))) \wedge \\
 (p (ap c_2Earithmetic_2EODD (ap c_2Earithmetic_2EBIT1 V0n)))))))))) \\
 \end{aligned} \tag{55}$$

Assume the following.

$$\begin{aligned}
 & \forall A_27a.\text{nonempty } A_27a \Rightarrow \forall A_27b.\text{nonempty } A_27b \Rightarrow \\
 & \forall V0x \in (ty_2Epair_2Eprod A_27a A_27b). (\exists V1q \in A_27a. \\
 & (\exists V2r \in A_27b. (V0x = (ap (ap (c_2Epair_2E2C A_27a A_27b) \\
 & V1q) V2r)))))) \\
 \end{aligned} \tag{56}$$

Assume the following.

$$\begin{aligned}
 (\forall V0x \in ty_2Erealax_2Ereal. ((ap (ap c_2Erealax_2Ereal_mul \\
 ap c_2Ereal_2Ereal_of_num (ap c_2Earithmetic_2ENUMERAL (\\
 ap c_2Earithmetic_2EBIT1 c_2Earithmetic_2EZERO))) V0x) = V0x)) \\
 \end{aligned} \tag{57}$$

Assume the following.

$$(\forall V0x \in ty_2Erealax_2Ereal. ((ap (ap c_2Erealax_2Ereal_add \\
 V0x) (ap c_2Ereal_2Ereal_of_num c_2Enum_2E0)) = V0x)) \tag{58}$$

Assume the following.

$$\begin{aligned}
 (\forall V0x \in ty_2Erealax_2Ereal. ((ap (ap c_2Erealax_2Ereal_mul \\
 V0x) (ap c_2Ereal_2Ereal_of_num (ap c_2Earithmetic_2ENUMERAL \\
 (ap c_2Earithmetic_2EBIT1 c_2Earithmetic_2EZERO)))) = V0x)) \\
 \end{aligned} \tag{59}$$

Assume the following.

$$\begin{aligned}
 (\forall V0x \in ty_2Erealax_2Ereal. ((ap (ap c_2Erealax_2Ereal_mul \\
 V0x) (ap c_2Ereal_2Ereal_of_num c_2Enum_2E0)) = (ap c_2Ereal_2Ereal_of_num \\
 c_2Enum_2E0))) \\
 \end{aligned} \tag{60}$$

Assume the following.

$$\begin{aligned}
 (\forall V0x \in ty_2Erealax_2Ereal. ((ap (ap c_2Ereal_2F (ap \\
 c_2Ereal_2Ereal_of_num c_2Enum_2E0)) V0x) = (ap c_2Ereal_2Ereal_of_num \\
 c_2Enum_2E0))) \\
 \end{aligned} \tag{61}$$

Assume the following.

$$\begin{aligned}
& (\forall V0x \in ty_2Erealax_2Ereal. (\forall V1n \in ty_2Enum_2Enum. \\
& (\forall V2a \in ty_2Enum_2Enum. (\forall V3y \in ty_2Erealax_2Ereal. \\
& (((ap (ap c_2Ereal_2Epow V0x) c_2Enum_2E0) = (ap c_2Ereal_2Ereal_of_num \\
& (ap c_2Earithmetic_2ENUMERAL (ap c_2Earithmetic_2EBIT1 c_2Earithmetic_2EZERO)))) \wedge \\
& (((ap (ap c_2Ereal_2Epow (ap c_2Ereal_2Ereal_of_num c_2Enum_2E0)) \\
& (ap c_2Earithmetic_2ENUMERAL (ap c_2Earithmetic_2EBIT1 V1n))) = \\
& (ap c_2Ereal_2Ereal_of_num c_2Enum_2E0)) \wedge (((ap (ap c_2Ereal_2Epow \\
& (ap c_2Ereal_2Ereal_of_num c_2Enum_2E0)) (ap c_2Earithmetic_2ENUMERAL \\
& (ap c_2Earithmetic_2EBIT2 V1n))) = (ap c_2Ereal_2Ereal_of_num \\
& c_2Enum_2E0)) \wedge (((ap (ap c_2Ereal_2Epow (ap c_2Ereal_2Ereal_of_num \\
& (ap c_2Earithmetic_2ENUMERAL V2a))) (ap c_2Earithmetic_2ENUMERAL \\
& V1n)) = (ap c_2Ereal_2Ereal_of_num (ap (ap c_2Earithmetic_2EEEXP \\
& (ap c_2Earithmetic_2ENUMERAL V2a)) (ap c_2Earithmetic_2ENUMERAL \\
& V1n)))) \wedge (((ap (ap c_2Ereal_2Epow (ap c_2Erealax_2Ereal_neg \\
& (ap c_2Ereal_2Ereal_of_num (ap c_2Earithmetic_2ENUMERAL V2a)))) \\
& (ap c_2Earithmetic_2ENUMERAL V1n)) = (ap (ap (ap (c_2Ebool_2ECOND \\
& (ty_2Erealax_2Ereal^{ty_2Erealax_2Ereal})) (ap c_2Earithmetic_2EODD \\
& (ap c_2Earithmetic_2ENUMERAL V1n))) c_2Erealax_2Ereal_neg) \\
& (\lambda V4x \in ty_2Erealax_2Ereal. V4x)) (ap c_2Ereal_2Ereal_of_num \\
& (ap (ap c_2Earithmetic_2EEEXP (ap c_2Earithmetic_2ENUMERAL V2a)) \\
& (ap c_2Earithmetic_2ENUMERAL V1n)))) \wedge ((ap (ap c_2Ereal_2Epow \\
& (ap (ap c_2Ereal_2E_2F V0x) V3y)) V1n) = (ap (ap c_2Ereal_2E_2F (\\
& ap (ap c_2Ereal_2Epow V0x) V1n)) (ap (ap c_2Ereal_2Epow V3y) V1n))))))) \\
& (62)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& (\forall V0n \in ty_2Enum_2Enum. (\forall V1m \in ty_2Enum_2Enum. \\
& (((ap c_2Ereal_2Ereal_of_num V0n) = (ap c_2Ereal_2Ereal_of_num \\
& V1m)) \Leftrightarrow (V0n = V1m)) \wedge (((((ap c_2Erealax_2Ereal_neg (ap c_2Ereal_2Ereal_of_num \\
& V0n)) = (ap c_2Ereal_2Ereal_of_num V1m)) \Leftrightarrow ((V0n = c_2Enum_2E0) \wedge \\
& (V1m = c_2Enum_2E0))) \wedge (((ap c_2Ereal_2Ereal_of_num V0n) = \\
& (ap c_2Erealax_2Ereal_neg (ap c_2Ereal_2Ereal_of_num V1m)) \Leftrightarrow \\
& ((V0n = c_2Enum_2E0) \wedge (V1m = c_2Enum_2E0))) \wedge (((ap c_2Erealax_2Ereal_neg \\
& (ap c_2Ereal_2Ereal_of_num V0n)) = (ap c_2Erealax_2Ereal_neg \\
& (ap c_2Ereal_2Ereal_of_num V1m)) \Leftrightarrow (V0n = V1m))))))) \\
& (63)
\end{aligned}$$

Assume the following.

$$(\forall V0t \in 2. ((\neg(\neg(p V0t))) \Leftrightarrow (p V0t))) \quad (64)$$

Assume the following.

$$(\forall V0A \in 2. ((p V0A) \Rightarrow ((\neg(p V0A)) \Rightarrow False))) \quad (65)$$

Assume the following.

$$\begin{aligned}
& (\forall V0A \in 2. (\forall V1B \in 2. (((\neg((p V0A) \vee (p V1B))) \Rightarrow False) \Leftrightarrow \\
& ((p V0A) \Rightarrow False) \Rightarrow ((\neg(p V1B)) \Rightarrow False)))) \\
& (66)
\end{aligned}$$

Assume the following.

$$(\forall V0A \in 2. (\forall V1B \in 2. (((\neg((\neg(p V0A)) \vee (p V1B))) \Rightarrow False) \Leftrightarrow ((p V0A) \Rightarrow ((\neg(p V1B)) \Rightarrow False)))) \quad (67)$$

Assume the following.

$$(\forall V0A \in 2. (((\neg(p V0A)) \Rightarrow False) \Rightarrow (((p V0A) \Rightarrow False) \Rightarrow False))) \quad (68)$$

Assume the following.

$$\begin{aligned} & (\forall V0p \in 2. (\forall V1q \in 2. (\forall V2r \in 2. (((p V0p) \Leftrightarrow (p V1q)) \Leftrightarrow ((p V0p) \vee ((p V1q) \vee (p V2r)))) \wedge (((p V0p) \vee ((\neg(p V2r)) \vee (\neg(p V1q)))) \wedge (((p V1q) \vee ((\neg(p V2r)) \vee (\neg(p V0p)))) \wedge ((p V2r) \vee ((\neg(p V1q)) \vee (\neg(p V0p))))))))))) \\ & \end{aligned} \quad (69)$$

Assume the following.

$$\begin{aligned} & (\forall V0p \in 2. (\forall V1q \in 2. (\forall V2r \in 2. (((p V0p) \Leftrightarrow (p V1q)) \Rightarrow ((p V0p) \vee (p V1q))) \wedge (((p V0p) \vee ((\neg(p V2r)) \vee (\neg(p V1q)))) \wedge (((p V2r) \vee ((\neg(p V1q)) \vee ((\neg(p V0p))))))))))) \\ & \end{aligned} \quad (70)$$

Assume the following.

$$(\forall V0p \in 2. (\forall V1q \in 2. (((\neg((p V0p) \Rightarrow (p V1q))) \Rightarrow (p V0p)))) \quad (71)$$

Assume the following.

$$(\forall V0p \in 2. (\forall V1q \in 2. (((\neg((p V0p) \Rightarrow (p V1q))) \Rightarrow (\neg(p V1q)))) \quad (72)$$

Assume the following.

$$(\forall V0p \in 2. (\forall V1q \in 2. (((\neg((p V0p) \vee (p V1q))) \Rightarrow (\neg(p V0p)))) \quad (73)$$

Assume the following.

$$(\forall V0p \in 2. (\forall V1q \in 2. (((\neg((p V0p) \vee (p V1q))) \Rightarrow (\neg(p V1q)))) \quad (74)$$

Assume the following.

$$(\forall V0p \in 2. (((\neg(\neg(p V0p))) \Rightarrow (p V0p))) \quad (75)$$

Theorem 1

$$\begin{aligned} & (\forall V0x \in ty_2Erealax_2Ereal. (\forall V1b \in ty_2Enum_2Enum. \\ & ((ap (ap c_2Eieee_2Evalof c_2Eieee_2Efloat_format) (ap c_2Eieee_2Edefloat \\ & (ap c_2Eieee_2Efloat (ap (ap (ap c_2Eieee_2Ezerosign c_2Eieee_2Efloat_format) \\ & V1b) (ap (ap (ap c_2Eieee_2Erround c_2Eieee_2Efloat_format) c_2Eieee_2ETo_nearest) \\ & V0x)))) = (ap (ap c_2Eieee_2Evalof c_2Eieee_2Efloat_format) \\ & (ap (ap (ap c_2Eieee_2Erround c_2Eieee_2Efloat_format) c_2Eieee_2ETo_nearest) \\ & V0x)))))) \\ & \end{aligned}$$