thm_2EPast__Temporal__Logic_2ENEGATION__NORMAL__FORM (TM-TYj84kdC7gkVdTB8tuuMGGMzWWG7a7nN3)

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

$$nonempty\ ty\_2Enum\_2Enum \quad (1)$$

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

$$c\_2Enum\_2EREP\_\_num \in (omega^{ty\_2Enum\_2Enum}) \quad (2)$$

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

$$c\_2Enum\_2ESUC\_\_REP \in (omega^{omega}) \quad (3)$$

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

$$c\_2Enum\_2EABS\_\_num \in (ty\_2Enum\_2Enum^{omega}) \quad (4)$$

Definition 1 *We define* c_2Emin_2E_3D *to be* $\lambda A.\lambda x \in A.\lambda y \in A.inj\_\_o\ (x = y)$ *of type* $\iota \Rightarrow \iota$.

Definition 2 *We define* c_2Ebool_2ET *to be* $(ap\ (ap\ (\mathsf{c\_2Emin\_2E\_3D}\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V$

Definition 3 *We define* c_2Ebool_2E_21 *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ (ap\ (\mathsf{c\_2Emin\_2E\_3D}\ (2^{A\_27}$

Definition 4 *We define* c_2Enum_2ESUC *to be* $\lambda V0m \in ty\_2Enum\_2Enum.(ap\ c\_2Enum\_2EABS\_\_num\ ($

Definition 5 *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 $c\_2Enum\_2EZERO\_\_REP : \iota$ be given. Assume the following.

$$c\_2Enum\_2EZERO\_\_REP \in omega \quad (5)$$

Definition 6 *We define* c_2Enum_2E0 *to be* $(ap\ c\_2Enum\_2EABS\_\_num\ c\_2Enum\_2EZERO\_\_REP)$.

Definition 7 *We define* c_2Ebool_2EF *to be* $(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V0t \in 2.V0t))$.

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_2F_5C *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V2t \in 2$

Definition 10 *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 11 *We define* c_2Eprim__rec_2EPRE *to be* $\lambda V0m \in ty\_2Enum\_2Enum.(ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2E}$

Definition 12 *We define* c_2Ebool_2E_7E *to be* $(\lambda V0t \in 2.(ap\ (ap\ \mathsf{c\_2Emin\_2E\_3D\_3D\_3E}\ V0t)\ \mathsf{c\_2Ebool\_2E}$

Definition 13 *We define* c_2Ebool_2E_3F *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ V0P\ (ap\ (\mathsf{c\_2Emin\_2E\_40}$

Definition 14 *We define* c_2Eprim__rec_2E_3C *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2Enu$

Definition 15 *We define* c_2EPast__Temporal__Logic_2EPSNEXT *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1t0 \in$

Definition 16 *We define* c_2Ebool_2E_5C_2F *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V2t \in$

Definition 17 *We define* c_2EPast__Temporal__Logic_2EPNEXT *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1t0 \in$

Definition 18 *We define* c_2Earithmetic_2E_3C_3D *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2$

Definition 19 *We define* c_2EPast__Temporal__Logic_2EPALWAYS *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1t0$

Definition 20 *We define* c_2EPast__Temporal__Logic_2EPEVENTUAL *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V$

Definition 21 *We define* c_2EPast__Temporal__Logic_2EPSWHEN *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in$

Definition 22 *We define* c_2EPast__Temporal__Logic_2EPSUNTIL *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in$

Definition 23 *We define* c_2EPast__Temporal__Logic_2EPSBEFORE *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b$

Definition 24 *We define* c_2EPast__Temporal__Logic_2EPWHEN *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in ($

Definition 25 *We define* c_2EPast__Temporal__Logic_2EPUNTIL *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in ($

Definition 26 *We define* c_2EPast__Temporal__Logic_2EPBEFORE *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in$

Definition 27 *We define* c_2ETemporal__Logic_2ENEXT *to be* $\lambda V0P \in (2^{ty\_2Enum\_2Enum}).(\lambda V1t \in ty\_2En$

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

$$c\_2Earithmetic\_2E\_2B \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \quad (6)$$

Definition 28 *We define* c_2ETemporal__Logic_2EALWAYS *to be* $\lambda V0P \in (2^{ty\_2Enum\_2Enum}).\lambda V1t0 \in ty\_2$

Definition 29 *We define* c_2ETemporal__Logic_2EEVENTUAL *to be* $\lambda V0P \in (2^{ty\_2Enum\_2Enum}).\lambda V1t0 \in t$

Definition 30 *We define* c_2ETemporal__Logic_2EWATCH *to be* $\lambda V0q \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in (2^{ty\_2E}$

Definition 31 *We define* c_2ETemporal__Logic_2EWHEN *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in (2^{ty\_2En}$

Definition 32 *We define* c_2ETemporal__Logic_2ESWHEN *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in (2^{ty\_2E}$

Definition 33 *We define* c_2ETemporal__Logic_2EBEFORE *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in (2^{ty\_2}$

Definition 34 *We define* c_2ETemporal__Logic_2ESUNTIL *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in (2^{ty\_2E}$

Definition 35 *We define* c_2ETemporal__Logic_2EUNTIL *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in (2^{ty\_2En}$

Definition 36 *We define* c_2ETemporal__Logic_2ESBEFORE *to be* $\lambda V0a \in (2^{ty\_2Enum\_2Enum}).\lambda V1b \in (2^{ty}$

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

$$c\_2Earithmetic\_2EEVEN \in (2^{ty\_2Enum\_2Enum}) \tag{7}$$

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

$$c\_2Earithmetic\_2EODD \in (2^{ty\_2Enum\_2Enum}) \tag{8}$$

Definition 37 *We define* c_2Earithmetic_2E_3E *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2En$

Definition 38 *We define* c_2Earithmetic_2E_3E_3D *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2$

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

$$c\_2Earithmetic\_2EEXP \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{9}$$

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

$$c\_2Earithmetic\_2E\_2D \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{10}$$

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

$$c\_2Earithmetic\_2E\_2A \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{11}$$

Definition 39 *We define* c_2Earithmetic_2ENUMERAL *to be* $\lambda V0x \in ty\_2Enum\_2Enum.V0x.$

Definition 40 *We define* c_2Enumeral_2EiiSUC *to be* $\lambda V0n \in ty\_2Enum\_2Enum.(ap$ c_2Enum_2ESUC $(ap$

Definition 41 *We define* c_2Enumeral_2EiZ *to be* $\lambda V0x \in ty\_2Enum\_2Enum.V0x.$

Definition 42 *We define* c_2Earithmetic_2EBIT2 *to be* $\lambda V0n \in ty\_2Enum\_2Enum.(ap\ (ap\ c\_2Earithmetic$

Definition 43 *We define* c_2Earithmetic_2EBIT1 *to be* $\lambda V0n \in ty\_2Enum\_2Enum.(ap\ (ap\ c\_2Earithmetic$

Definition 44 *We define* c_2Earithmetic_2EZERO *to be* c_2Enum_2E0*.*

Assume the following.

$$(\forall V0P \in (2^{ty\_2Enum\_2Enum}).(\forall V1t0 \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EALWAYS}\ V0P)\ V1t0))\Leftrightarrow((p\ (ap\ V0P\ V1t0))\wedge(p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ENEXT}\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EALWAYS}\ V0P))\ V1t0)))))) \quad (12)$$

Assume the following.

$$(\forall V0P \in (2^{ty\_2Enum\_2Enum}).(\forall V1t0 \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EEVENTUAL}\ V0P)\ V1t0))\Leftrightarrow((p\ (ap\ V0P\ V1t0))\vee(p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ENEXT}\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EEVENTUAL}\ V0P))\ V1t0)))))) \quad (13)$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}).(\forall V2t0 \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EWHEN}\ V0a)\ V1b)\ V2t0))\Leftrightarrow(p\ (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ 2)\ (ap\ V1b\ V2t0))\ (ap\ V0a\ V2t0))\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ENEXT}\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EWHEN}\ V0a)\ V1b))\ V2t0))))))) \quad (14)$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}).(\forall V2t0 \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EUNTIL}\ V0a)\ V1b)\ V2t0))\Leftrightarrow((\neg(p\ (ap\ V1b\ V2t0)))\Rightarrow((p\ (ap\ V0a\ V2t0))\wedge(p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ENEXT}\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EUNTIL}\ V0a)\ V1b))\ V2t0)))))))) \quad (15)$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}).(\forall V2t0 \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EBEFORE}\ V0a)\ V1b)\ V2t0))\Leftrightarrow((\neg(p\ (ap\ V1b\ V2t0)))\wedge((p\ (ap\ V0a\ V2t0))\vee(p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ENEXT}\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EBEFORE}\ V0a)\ V1b))\ V2t0)))))))) \quad (16)$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}).(\forall V2t0 \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESWHEN}\ V0a)\ V1b)\ V2t0))\Leftrightarrow(p\ (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ 2)\ (ap\ V1b\ V2t0))\ (ap\ V0a\ V2t0))\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ENEXT}\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESWHEN}\ V0a)\ V1b))\ V2t0))))))) \quad (17)$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}). (\forall V2t0 \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESUNTIL}\ V0a)\ V1b)\ V2t0)) \Leftrightarrow ((\neg(p\ (ap\ V1b\ V2t0))) \Rightarrow ((p\ (ap\ V0a\ V2t0)) \wedge (p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ENEXT}\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESUNTIL}\ V0a)\ V1b))\ V2t0)))))))) \tag{18}$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}). (\forall V2t0 \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESBEFORE}\ V0a)\ V1b)\ V2t0)) \Leftrightarrow ((\neg(p\ (ap\ V1b\ V2t0))) \wedge ((p\ (ap\ V0a\ V2t0)) \vee (p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ENEXT}\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESBEFORE}\ V0a)\ V1b))\ V2t0)))))))) \tag{19}$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1t0 \in ty\_2Enum\_2Enum. ((\neg(p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EALWAYS}\ V0a)\ V1t0))) \Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EEVENTUAL}\ (\lambda V2t \in ty\_2Enum\_2Enum. (ap\ \mathsf{c\_2Ebool\_2E\_7E}\ (ap\ V0a\ V2t))))\ V1t0))))) \tag{20}$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1t0 \in ty\_2Enum\_2Enum. ((\neg(p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EEVENTUAL}\ V0a)\ V1t0))) \Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EALWAYS}\ (\lambda V2t \in ty\_2Enum\_2Enum. (ap\ \mathsf{c\_2Ebool\_2E\_7E}\ (ap\ V0a\ V2t))))\ V1t0))))) \tag{21}$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}). (\forall V2t0 \in ty\_2Enum\_2Enum.((\neg(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EWHEN}\ V0a)\ V1b)\ V2t0))) \Leftrightarrow (p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESWHEN}\ (\lambda V3t \in ty\_2Enum\_2Enum.(ap\ \mathsf{c\_2Ebool\_2E\_7E}\ (ap\ V0a\ V3t))))\ V1b)\ V2t0)))))) \tag{22}$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}). (\forall V2t0 \in ty\_2Enum\_2Enum.((\neg(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EUNTIL}\ V0a)\ V1b)\ V2t0))) \Leftrightarrow (p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESBEFORE}\ (\lambda V3t \in ty\_2Enum\_2Enum.(ap\ \mathsf{c\_2Ebool\_2E\_7E}\ (ap\ V0a\ V3t))))\ V1b)\ V2t0)))))) \tag{23}$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}).(\forall V2t0 \in ty\_2Enum\_2Enum.((\neg(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EBEFORE}\ V0a)\ V1b)\ V2t0)))\Leftrightarrow(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESUNTIL}\ (\lambda V3t \in ty\_2Enum\_2Enum.(ap\ \mathsf{c\_2Ebool\_2E\_7E}\ (ap\ V0a\ V3t))))\ V1b)\ V2t0)))))) \tag{24}$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}).(\forall V2t0 \in ty\_2Enum\_2Enum.((\neg(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESWHEN}\ V0a)\ V1b)\ V2t0)))\Leftrightarrow(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EWHEN}\ (\lambda V3t \in ty\_2Enum\_2Enum.(ap\ \mathsf{c\_2Ebool\_2E\_7E}\ (ap\ V0a\ V3t))))\ V1b)\ V2t0)))))) \tag{25}$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}).(\forall V2t0 \in ty\_2Enum\_2Enum.((\neg(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESUNTIL}\ V0a)\ V1b)\ V2t0)))\Leftrightarrow(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EBEFORE}\ (\lambda V3t \in ty\_2Enum\_2Enum.(ap\ \mathsf{c\_2Ebool\_2E\_7E}\ (ap\ V0a\ V3t))))\ V1b)\ V2t0)))))) \tag{26}$$

Assume the following.

$$(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1b \in (2^{ty\_2Enum\_2Enum}).(\forall V2t0 \in ty\_2Enum\_2Enum.((\neg(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2ESBEFORE}\ V0a)\ V1b)\ V2t0)))\Leftrightarrow(p\ (ap\ (ap\ (ap\ \mathsf{c\_2ETemporal\_\_Logic\_2EUNTIL}\ (\lambda V3t \in ty\_2Enum\_2Enum.(ap\ \mathsf{c\_2Ebool\_2E\_7E}\ (ap\ V0a\ V3t))))\ V1b)\ V2t0)))))) \tag{27}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(((ap\ (ap\ c\_2Earithmetic\_2E\_2B\ \mathsf{c\_2Enum\_2E0})\ V0m) = V0m)\land(((ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ \mathsf{c\_2Enum\_2E0}) = V0m)\land(((ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0m))\ V1n) = (ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V1n)))\land((ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V1n)) = (ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V1n)))))))) \tag{28}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V1n) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V1n)\ V0m)))) \tag{29}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(\forall V2p \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V1n)\ V2p)) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V1n))\ V2p))))) \tag{30}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V0m)\ V1n)) \Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0m))\ V1n))))) \tag{31}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ \mathsf{c\_2Enum\_2E0})\ V0n))) \tag{32}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.((\neg(p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V0m)\ V1n))) \Leftrightarrow (p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V1n)\ V0m))))) \tag{33}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ \mathsf{c\_2Enum\_2E0})\ V0m) = \mathsf{c\_2Enum\_2E0}) \wedge (((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ \mathsf{c\_2Enum\_2E0}) = \mathsf{c\_2Enum\_2E0}) \wedge (((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})))\ V0m) = V0m) \wedge (((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO}))) = V0m) \wedge (((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0m))\ V1n) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ V1n))\ V1n)) \wedge ((ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V1n)) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ (ap\ (ap\ c\_2Earithmetic\_2E\_2A\ V0m)\ V1n)))))))))) \tag{34}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(\forall V2p \in ty\_2Enum\_2Enum.(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ V1n)) \wedge (p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V1n)\ V2p))) \Rightarrow (p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ V2p)))))) \tag{35}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ V0m))) \tag{36}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.((V0m = V1n)\Leftrightarrow((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ V1n))\wedge(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V1n)\ V0m)))))) \tag{37}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(\forall V2p \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V1n))\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V2p)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V1n)\ V2p)))))) \tag{38}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.((\neg(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0m)\ V1n)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V1n))\ V0m))))) \tag{39}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.((\neg(V0m = V1n))\Leftrightarrow((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0m))\ V1n))\vee(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V1n))\ V0m)))))) \tag{40}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.((ap\ \mathsf{c\_2Enum\_2ESUC}\ V0n) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ (ap\ \mathsf{c\_2Earithmetic\_2ENUMERAL}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ \mathsf{c\_2Earithmetic\_2EZERO})))\ V0n))) \tag{41}$$

Assume the following.

$$True \tag{42}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(((p\ V0t1)\Rightarrow(p\ V1t2))\Rightarrow(((p\ V1t2)\Rightarrow(p\ V0t1))\Rightarrow((p\ V0t1)\Leftrightarrow(p\ V1t2)))))) \tag{43}$$

Assume the following.

$$(\forall V0t \in 2.(False\Rightarrow(p\ V0t))) \tag{44}$$

Assume the following.

$$(\forall V0t \in 2.((p\ V0t)\vee(\neg(p\ V0t)))) \tag{45}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow(\forall V0t \in 2.((\forall V1x \in A\_27a.(p\ V0t))\Leftrightarrow(p\ V0t))) \tag{46}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(\forall V2t3 \in 2.(((p\ V0t1)\wedge ((p\ V1t2)\wedge(p\ V2t3)))\Leftrightarrow(((p\ V0t1)\wedge(p\ V1t2))\wedge(p\ V2t3)))))) \tag{47}$$

Assume the following.

$$(\forall V0t \in 2.(((True\wedge(p\ V0t))\Leftrightarrow(p\ V0t))\wedge((((p\ V0t)\wedge True)\Leftrightarrow (p\ V0t))\wedge(((False\wedge(p\ V0t))\Leftrightarrow False)\wedge((((p\ V0t)\wedge False)\Leftrightarrow False)\wedge (((p\ V0t)\wedge(p\ V0t))\Leftrightarrow(p\ V0t))))))) \tag{48}$$

Assume the following.

$$(\forall V0t \in 2.(((True\vee(p\ V0t))\Leftrightarrow True)\wedge((((p\ V0t)\vee True)\Leftrightarrow True)\wedge (((False\vee(p\ V0t))\Leftrightarrow(p\ V0t))\wedge((((p\ V0t)\vee False)\Leftrightarrow(p\ V0t))\wedge(((p\ V0t)\vee (p\ V0t))\Leftrightarrow(p\ V0t))))))) \tag{49}$$

Assume the following.

$$(\forall V0t \in 2.(((True\Rightarrow(p\ V0t))\Leftrightarrow(p\ V0t))\wedge((((p\ V0t)\Rightarrow True)\Leftrightarrow True)\wedge(((False\Rightarrow(p\ V0t))\Leftrightarrow True)\wedge((((p\ V0t)\Rightarrow(p\ V0t))\Leftrightarrow True)\wedge(((p\ V0t)\Rightarrow False)\Leftrightarrow(\neg(p\ V0t)))))))) \tag{50}$$

Assume the following.

$$((\forall V0t \in 2.((\neg(\neg(p\ V0t)))\Leftrightarrow(p\ V0t)))\wedge(((\neg True)\Leftrightarrow False)\wedge ((\neg False)\Leftrightarrow True))) \tag{51}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow(\forall V0x \in A\_27a.((V0x = V0x)\Leftrightarrow True)) \tag{52}$$

Assume the following.

$$(\forall V0t \in 2.(((True\Leftrightarrow(p\ V0t))\Leftrightarrow(p\ V0t))\wedge((((p\ V0t)\Leftrightarrow True)\Leftrightarrow (p\ V0t))\wedge(((False\Leftrightarrow(p\ V0t))\Leftrightarrow(\neg(p\ V0t)))\wedge(((p\ V0t)\Leftrightarrow False)\Leftrightarrow(\neg(p\ V0t))))))) \tag{53}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(\forall V2C \in 2.(((p\ V0A)\vee((p\ V1B)\vee(p\ V2C)))\Leftrightarrow(((p\ V0A)\vee(p\ V1B))\vee(p\ V2C)))))) \tag{54}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((p\ V0A)\wedge(p\ V1B)))\Leftrightarrow((\neg(p\ V0A))\vee(\neg(p\ V1B))))\wedge((\neg((p\ V0A)\vee(p\ V1B)))\Leftrightarrow((\neg(p\ V0A))\wedge(\neg(p\ V1B))))))) \tag{55}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((p\ V0A) \Rightarrow (p\ V1B)) \Leftrightarrow ((\neg (p\ V0A)) \vee (p\ V1B))))) \tag{56}$$

Assume the following.

$$(\forall V0t \in 2.(((p\ V0t) \Rightarrow False) \Leftrightarrow ((p\ V0t) \Leftrightarrow False))) \tag{57}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(\forall V2t3 \in 2.(((p\ V0t1) \Rightarrow ((p\ V1t2) \Rightarrow (p\ V2t3))) \Leftrightarrow (((p\ V0t1) \wedge (p\ V1t2)) \Rightarrow (p\ V2t3)))))) \tag{58}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(((p\ V0t1) \Leftrightarrow (p\ V1t2)) \Leftrightarrow (((p\ V0t1) \wedge (p\ V1t2)) \vee ((\neg (p\ V0t1)) \wedge (\neg (p\ V1t2))))))) \tag{59}$$

Assume the following.

$$(\forall V0P \in (2^{ty\_2Enum\_2Enum}).(((p\ (ap\ V0P\ \mathsf{c\_2Enum\_2E0})) \wedge (\forall V1n \in ty\_2Enum\_2Enum.((p\ (ap\ V0P\ V1n)) \Rightarrow (p\ (ap\ V0P\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V1n)))))) \Rightarrow (\forall V2n \in ty\_2Enum\_2Enum.(p\ (ap\ V0P\ V2n))))) \tag{60}$$

Assume the following.

$$
\begin{gathered}
((\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}
\end{gathered}
$$

Assume the following.

$$
\begin{gathered}
(\forall V0n \in \mathit{ty\_2Enum\_2Enum}.(\forall V1m \in \mathit{ty\_2Enum\_2Enum}.(\\
((ap\ \mathsf{c\_2Enumeral\_2EiZ}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ \mathsf{c\_2Earithmetic\_2EZERO}) \\
V0n)) = V0n)\wedge(((ap\ \mathsf{c\_2Enumeral\_2EiZ}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ \mathsf{c\_2Earithmetic\_2EZERO})) = V0n)\wedge(((ap\ \mathsf{c\_2Enumeral\_2EiZ}\ (\\
ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (\\
ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (\\
ap\ \mathsf{c\_2Enumeral\_2EiZ}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge \\
(((ap\ \mathsf{c\_2Enumeral\_2EiZ}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
(ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((ap\ \mathsf{c\_2Enumeral\_2EiZ}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
(ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((ap\ \mathsf{c\_2Enumeral\_2EiZ}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
(ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ \mathsf{c\_2Earithmetic\_2EZERO}) \\
V0n)) = (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0n))\wedge(((ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ \mathsf{c\_2Earithmetic\_2EZERO})) = (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0n))\wedge(((ap \\
\mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
(ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
(ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
(ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge(\\
((ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2} \\
V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
(ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ V1m))))\wedge \\
(((ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ \mathsf{c\_2Earithmetic\_2EZERO}) \\
V0n)) = (ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ V0n))\wedge(((ap\ \mathsf{c\_2Enumeral\_2EiiSUC} \\
(ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ V0n)\ \mathsf{c\_2Earithmetic\_2EZERO})) = (\\
ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ V0n))\wedge(((ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ (\\
ap\ \mathit{c\_2Earithmetic\_2E\_2B}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1} \\
V1m))) = (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ V1m))))\wedge(((ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B} \\
(ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = \\
(ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ V1m))))\wedge(((ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B} \\
(ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m))) = \\
(ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ (ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ V1m))))\wedge((ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B} \\
(ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m))) = \\
(ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ (ap\ \mathsf{c\_2Enumeral\_2EiiSUC}\ (ap\ (ap\ \mathit{c\_2Earithmetic\_2E\_2B} \\
V0n)\ V1m)))))))))))))))))))))))
\end{gathered}
\tag{62}
$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(\forall V1m \in ty\_2Enum\_2Enum.(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ \mathsf{c\_2Earithmetic\_2EZERO})\ V0n))\Leftrightarrow True)\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ \mathsf{c\_2Earithmetic\_2EZERO}))\Leftrightarrow False)\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ \mathsf{c\_2Earithmetic\_2EZERO}))\Leftrightarrow False)\wedge (((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0n)\ V1m)))\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0n)\ V1m)))\wedge(((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT1}\ V1m)))\Leftrightarrow(\neg(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V1m)\ V0n))))\wedge((p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V0n))\ (ap\ \mathsf{c\_2Earithmetic\_2EBIT2}\ V1m)))\Leftrightarrow(p\ (ap\ (ap\ \mathsf{c\_2Earithmetic\_2E\_3C\_3D}\ V0n)\ V1m))))))))))) \tag{63}$$

Assume the following.

$$(((ap\ \mathsf{c\_2Eprim\_\_rec\_2EPRE}\ \mathsf{c\_2Enum\_2E0}) = \mathsf{c\_2Enum\_2E0})\wedge(\forall V0m \in ty\_2Enum\_2Enum.((ap\ \mathsf{c\_2Eprim\_\_rec\_2EPRE}\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V0m)) = V0m))) \tag{64}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(\neg(p\ (ap\ (ap\ \mathsf{c\_2Eprim\_\_rec\_2E\_3C}\ V0n)\ V0n)))) \tag{65}$$

Assume the following.

$$(\forall V0t \in 2.((\neg(\neg(p\ V0t)))\Leftrightarrow(p\ V0t))) \tag{66}$$

Assume the following.

$$(\forall V0A \in 2.((p\ V0A)\Rightarrow((\neg(p\ V0A))\Rightarrow False))) \tag{67}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((p\ V0A)\vee(p\ V1B)))\Rightarrow False)\Leftrightarrow (((p\ V0A)\Rightarrow False)\Rightarrow((\neg(p\ V1B))\Rightarrow False))))) \tag{68}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((\neg(p\ V0A))\vee(p\ V1B)))\Rightarrow False)\Leftrightarrow ((p\ V0A)\Rightarrow((\neg(p\ V1B))\Rightarrow False))))) \tag{69}$$

Assume the following.

$$(\forall V0A \in 2.(((\neg(p\ V0A))\Rightarrow False)\Rightarrow(((p\ V0A)\Rightarrow False)\Rightarrow False))) \tag{70}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\Leftrightarrow(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee((p\ V1q)\vee(p\ V2r)))\wedge(((p\ V0p)\vee((\neg(p\ V2r))\vee(\neg(p\ V1q))))\wedge(((p\ V1q)\vee((\neg(p\ V2r))\vee(\neg(p\ V0p))))\wedge((p\ V2r)\vee((\neg(p\ V1q))\vee(\neg(p\ V0p))))))))))) \tag{71}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\wedge(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee((\neg(p\ V1q))\vee(\neg(p\ V2r))))\wedge(((p\ V1q)\vee(\neg(p\ V0p)))\wedge((p\ V2r)\vee(\neg(p\ V0p))))))))) \tag{72}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\vee(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee(\neg(p\ V1q)))\wedge(((p\ V0p)\vee(\neg(p\ V2r)))\wedge((p\ V1q)\vee((p\ V2r)\vee(\neg(p\ V0p)))))))))) \tag{73}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(((p\ V0p)\Leftrightarrow(\neg(p\ V1q)))\Leftrightarrow(((p\ V0p)\vee(p\ V1q))\wedge((\neg(p\ V1q))\vee(\neg(p\ V0p))))))) \tag{74}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\Rightarrow(p\ V1q)))\Rightarrow(p\ V0p)))) \tag{75}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\Rightarrow(p\ V1q)))\Rightarrow(\neg(p\ V1q))))) \tag{76}$$

Theorem 1

$$
\begin{gathered}
(\forall V0a \in (2^{ty\_2Enum\_2Enum}).(\forall V1t \in ty\_2Enum\_2Enum. \\
(\forall V2b \in (2^{ty\_2Enum\_2Enum}).(((\neg(p~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2ENEXT} \\
V0a)~V1t)))\Leftrightarrow(p~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2ENEXT}~(\lambda V3t \in ty\_2Enum\_2Enum. \\
(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V3t))))~V1t)))\wedge(((\neg(p~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2EALWAYS} \\
V0a)~V1t)))\Leftrightarrow(p~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2EEVENTUAL}~(\lambda V4t \in \\
ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V4t))))~V1t)))\wedge(((\\
\neg(p~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2EEVENTUAL}~V0a)~V1t)))\Leftrightarrow(p~(ap \\
(ap~\mathsf{c\_2ETemporal\_\_Logic\_2EALWAYS}~(\lambda V5t \in ty\_2Enum\_2Enum. \\
(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V5t))))~V1t)))\wedge(((\neg(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2EWHEN} \\
V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2ESWHEN}~(\lambda V6t \in \\
ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V6t))))~V2b)~V1t)))\wedge \\
(((\neg(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2EUNTIL}~V0a)~V2b)~V1t)))\Leftrightarrow \\
(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2ESBEFORE}~(\lambda V7t \in ty\_2Enum\_2Enum. \\
(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V7t))))~V2b)~V1t)))\wedge(((\neg(p~(ap~(ap~(ap \\
\mathsf{c\_2ETemporal\_\_Logic\_2EBEFORE}~V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2ESUNTIL} \\
(\lambda V8t \in ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V8t))))~V2b) \\
V1t)))\wedge(((\neg(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2ESWHEN}~V0a)~V2b) \\
V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2EWHEN}~(\lambda V9t \in ty\_2Enum\_2Enum. \\
(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V9t))))~V2b)~V1t)))\wedge(((\neg(p~(ap~(ap~(ap \\
\mathsf{c\_2ETemporal\_\_Logic\_2ESUNTIL}~V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2EBEFORE} \\
(\lambda V10t \in ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V10t)))) \\
V2b)~V1t)))\wedge(((\neg(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2ESBEFORE} \\
V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2ETemporal\_\_Logic\_2EUNTIL}~(\lambda V11t \in \\
ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V11t))))~V2b)~V1t)))\wedge \\
(((\neg(p~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPNEXT}~V0a)~V1t)))\Leftrightarrow \\
(p~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPSNEXT}~(\lambda V12t \in ty\_2Enum\_2Enum. \\
(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V12t))))~V1t)))\wedge(((\neg(p~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPSNEXT} \\
V0a)~V1t)))\Leftrightarrow(p~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPNEXT}~(\lambda V13t \in \\
ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V13t))))~V1t)))\wedge((\\
(\neg(p~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPALWAYS}~V0a)~V1t)))\Leftrightarrow \\
(p~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPEVENTUAL}~(\lambda V14t \in \\
ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V14t))))~V1t)))\wedge((\\
(\neg(p~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPEVENTUAL}~V0a)~V1t)))\Leftrightarrow \\
(p~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPALWAYS}~(\lambda V15t \in ty\_2Enum\_2Enum. \\
(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V15t))))~V1t)))\wedge(((\neg(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPWHEN} \\
V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPSWHEN} \\
(\lambda V16t \in ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V16t)))) \\
V2b)~V1t)))\wedge(((\neg(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPUNTIL} \\
V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPSBEFORE} \\
(\lambda V17t \in ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V17t)))) \\
V2b)~V1t)))\wedge(((\neg(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPBEFORE} \\
V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPSUNTIL} \\
(\lambda V18t \in ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V18t)))) \\
V2b)~V1t)))\wedge(((\neg(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPSWHEN} \\
V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPWHEN} \\
(\lambda V19t \in ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V19t)))) \\
V2b)~V1t)))\wedge(((\neg(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPSUNTIL} \\
V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPBEFORE} \\
(\lambda V20t \in ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V20t)))) \\
V2b)~V1t)))\wedge((\neg(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPSBEFORE} \\
V0a)~V2b)~V1t)))\Leftrightarrow(p~(ap~(ap~(ap~\mathsf{c\_2EPast\_\_Temporal\_\_Logic\_2EPUNTIL} \\
(\lambda V21t \in ty\_2Enum\_2Enum.(ap~\mathsf{c\_2Ebool\_2E\_7E}~(ap~V0a~V21t)))) \\
V2b)~V1t))))))))))))))))))))))))
\end{gathered}
$$