thm_2Edft_2EDFT__CONS (TMPH787fa3bcA4gordspCBC3MVTsKMUFFDW)

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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_2Ebool_2ET *to be* $(ap\ (ap\ (\mathsf{c\_2Emin\_2E\_3D}\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V$

Let $ty\_2Elist\_2Elist : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty\_2Elist\_2Elist\ A0) \tag{1}$$

Let $c\_2Edft\_2EDFT : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Edft\_2EDFT\ A\_27a\ A\_27b \in (((((A\_27a^{A\_27a})^{(ty\_2Elist\_2Elist\ A\_27b)})^{(ty\_2Elist\_2Elist\ A\_27b)})^{((A\_27a^{A\_27a})^{A\_27b})})^{((ty\_2Elist\_2E} \tag{2}$$

Let $c\_2Elist\_2ELIST\_\_TO\_\_SET : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Elist\_2ELIST\_\_TO\_\_SET\ A\_27a \in ((2^{A\_27a})^{(ty\_2Elist\_2Elist\ A\_27a)}) \tag{3}$$

Definition 3 *We define* c_2Ebool_2EIN *to be* $\lambda A\_27a : \iota.(\lambda V0x \in A\_27a.(\lambda V1f \in (2^{A\_27a}).(ap\ V1f\ V0x)))$

Let $c\_2Elist\_2ENIL : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Elist\_2ENIL\ A\_27a \in (ty\_2Elist\_2Elist\ A\_27a) \tag{4}$$

Definition 4 *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 5 *We define* c_2Ebool_2EF *to be* $(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V0t \in 2.V0t))$.

Definition 6 *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 7 *We define* c_2Ebool_2E_7E *to be* $(\lambda V0t \in 2.(ap\ (ap\ \mathsf{c\_2Emin\_2E\_3D\_3D\_3E}\ V0t)\ \mathsf{c\_2Ebool\_2EF}$

Definition 8 *We define* c_2Ebool_2E_2F_5C *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V2t \in 2$

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

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty\_2Epair\_2Eprod\ A0\ A1) \tag{5}$$

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

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2EABS\_\_prod\ A\_27a\ A\_27b \in ((ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)^{((2^{A\_27b})^{A\_27a})}) \tag{6}$$

Definition 9 *We define* c_2Epair_2E_2C *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0x \in A\_27a.\lambda V1y \in A\_27b.(ap\ (c\_2E$

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

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epred\_\_set\_2EGSPEC\ A\_27a\ A\_27b \in ((2^{A\_27a})^{((ty\_2Epair\_2Eprod\ A\_27a\ 2)^{A\_27b})}) \tag{7}$$

Definition 10 *We define* c_2EdirGraph_2EParents *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0G \in ((ty\_2Elist\_2Elist\ A$

Definition 11 *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 12 *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 13 *We define* c_2Epred__set_2EEMPTY *to be* $\lambda A\_27a : \iota.(\lambda V0x \in A\_27a.\mathsf{c\_2Ebool\_2EF})$.

Definition 14 *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 $c\_2Elist\_2ECONS : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Elist\_2ECONS\ A\_27a \in (((ty\_2Elist\_2Elist\ A\_27a)^{(ty\_2Elist\_2Elist\ A\_27a)})^{A\_27a}) \tag{8}$$

Let $c\_2Elist\_2EAPPEND : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Elist\_2EAPPEND\ A\_27a \in (((ty\_2Elist\_2Elist\ A\_27a)^{(ty\_2Elist\_2Elist\ A\_27a)})^{(ty\_2Elist\_2Elist\ A\_27a)}) \tag{9}$$

Definition 15 *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 16 *We define* c_2Ebool_2ECOND *to be* $\lambda A\_27a : \iota.(\lambda V0t \in 2.(\lambda V1t1 \in A\_27a.(\lambda V2t2 \in A\_27a.($

Assume the following.

$$True \tag{10}$$

Assume the following.

$$(\forall V0t \in 2.(((True\wedge(p\ V0t))\Leftrightarrow(p\ V0t))\wedge((((p\ V0t)\wedge True)\Leftrightarrow (p\ V0t))\wedge(((False\wedge(p\ V0t))\Leftrightarrow False)\wedge((((p\ V0t)\wedge False)\Leftrightarrow False)\wedge (((p\ V0t)\wedge(p\ V0t))\Leftrightarrow(p\ V0t))))))) \tag{11}$$

Assume the following.

$$(\forall V0t \in 2.(((True\vee(p\ V0t))\Leftrightarrow True)\wedge((((p\ V0t)\vee True)\Leftrightarrow True)\wedge (((False\vee(p\ V0t))\Leftrightarrow(p\ V0t))\wedge((((p\ V0t)\vee False)\Leftrightarrow(p\ V0t))\wedge(((p\ V0t)\vee (p\ V0t))\Leftrightarrow(p\ V0t))))))) \tag{12}$$

Assume the following.

$$(\forall V0t \in 2.(((True\Rightarrow(p\ V0t))\Leftrightarrow(p\ V0t))\wedge((((p\ V0t)\Rightarrow True)\Leftrightarrow True)\wedge(((False\Rightarrow(p\ V0t))\Leftrightarrow True)\wedge((((p\ V0t)\Rightarrow(p\ V0t))\Leftrightarrow True)\wedge(((p\ V0t)\Rightarrow False)\Leftrightarrow(\neg(p\ V0t)))))))) \tag{13}$$

Assume the following.

$$((\forall V0t \in 2.((\neg(\neg(p\ V0t)))\Leftrightarrow(p\ V0t)))\wedge(((\neg True)\Leftrightarrow False)\wedge ((\neg False)\Leftrightarrow True))) \tag{14}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow(\forall V0x \in A\_27a.(V0x = V0x)) \tag{15}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow(\forall V0x \in A\_27a.((V0x = V0x)\Leftrightarrow True)) \tag{16}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow(\forall V0x \in A\_27a.(\forall V1y \in A\_27a.((V0x = V1y)\Leftrightarrow(V1y = V0x)))) \tag{17}$$

Assume the following.

$$(\forall V0t \in 2.(((True\Leftrightarrow(p\ V0t))\Leftrightarrow(p\ V0t))\wedge((((p\ V0t)\Leftrightarrow True)\Leftrightarrow (p\ V0t))\wedge(((False\Leftrightarrow(p\ V0t))\Leftrightarrow(\neg(p\ V0t)))\wedge(((p\ V0t)\Leftrightarrow False)\Leftrightarrow(\neg(p\ V0t))))))) \tag{18}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow(\forall V0P \in (2^{A\_27a}).(\forall V1Q \in (2^{A\_27a}).((\forall V2x \in A\_27a.((p\ (ap\ V0P\ V2x))\wedge(p\ (ap\ V1Q\ V2x))))\Leftrightarrow ((\forall V3x \in A\_27a.(p\ (ap\ V0P\ V3x)))\wedge(\forall V4x \in A\_27a.(p\ (ap\ V1Q\ V4x))))))) \tag{19}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0P \in 2.(\forall V1Q \in (2^{A\_27a}).(((p\ V0P) \wedge (\forall V2x \in A\_27a.(p\ (ap\ V1Q\ V2x)))) \Leftrightarrow (\forall V3x \in A\_27a.((p\ V0P) \wedge (p\ (ap\ V1Q\ V3x))))))) \tag{20}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0Q \in 2.(\forall V1P \in (2^{A\_27a}).((\forall V2x \in A\_27a.((p\ (ap\ V1P\ V2x)) \vee (p\ V0Q))) \Leftrightarrow ((\forall V3x \in A\_27a.(p\ (ap\ V1P\ V3x))) \vee (p\ V0Q))))) \tag{21}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(\forall V2C \in 2.(((p\ V0A) \vee ((p\ V1B) \wedge (p\ V2C))) \Leftrightarrow (((p\ V0A) \vee (p\ V1B)) \wedge ((p\ V0A) \vee (p\ V2C))))))) \tag{22}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(\forall V2t3 \in 2.(((p\ V0t1) \Rightarrow ((p\ V1t2) \Rightarrow (p\ V2t3))) \Leftrightarrow (((p\ V0t1) \wedge (p\ V1t2)) \Rightarrow (p\ V2t3)))))) \tag{23}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0b \in 2.(\forall V1f \in (A\_27b^{A\_27a}).(\forall V2g \in (A\_27b^{A\_27a}).(\forall V3x \in A\_27a.((ap\ (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ (A\_27b^{A\_27a}))\ V0b)\ V1f)\ V2g)\ V3x) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ A\_27b)\ V0b)\ (ap\ V1f\ V3x))\ (ap\ V2g\ V3x))))))) \tag{24}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0f \in (A\_27b^{A\_27a}).(\forall V1b \in 2.(\forall V2x \in A\_27a.(\forall V3y \in A\_27a.((ap\ V0f\ (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ A\_27a)\ V1b)\ V2x)\ V3y)) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ A\_27b)\ V1b)\ (ap\ V0f\ V2x))\ (ap\ V0f\ V3y))))))) \tag{25}$$

Assume the following.

$$(\forall V0x \in 2.(\forall V1x\_27 \in 2.(\forall V2y \in 2.(\forall V3y\_27 \in 2.((((p\ V0x) \Leftrightarrow (p\ V1x\_27)) \wedge ((p\ V1x\_27) \Rightarrow ((p\ V2y) \Leftrightarrow (p\ V3y\_27)))) \Rightarrow (((p\ V0x) \Rightarrow (p\ V2y)) \Leftrightarrow ((p\ V1x\_27) \Rightarrow (p\ V3y\_27)))))))) \tag{26}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0P \in 2.(\forall V1Q \in 2.(\forall V2x \in A\_27a.(\forall V3x\_27 \in A\_27a.(\forall V4y \in A\_27a.(\forall V5y\_27 \in A\_27a.((((p\ V0P) \Leftrightarrow (p\ V1Q)) \wedge (((p\ V1Q) \Rightarrow (V2x = V3x\_27)) \wedge ((\neg(p\ V1Q)) \Rightarrow (V4y = V5y\_27)))) \Rightarrow ((ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ A\_27a)\ V0P)\ V2x)\ V4y) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ A\_27a)\ V1Q)\ V3x\_27)\ V5y\_27))))))))) \tag{27}$$

Assume the following.

$$
\begin{gathered}
\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\\
\forall V0G \in ((ty\_2Elist\_2Elist\ A\_27a)^{A\_27a}).(\forall V1f \in (\\
(A\_27b^{A\_27b})^{A\_27a}).(\forall V2seen \in (ty\_2Elist\_2Elist\ A\_27a). \\
(\forall V3acc \in A\_27b.(\forall V4visit\_\_now \in A\_27a.(\forall V5visit\_\_later \in \\
(ty\_2Elist\_2Elist\ A\_27a).((p\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ A\_27a) \\
(ap\ (\mathsf{c\_2EdirGraph\_2EParents}\ A\_27a\ A\_27a)\ V0G))) \Rightarrow (((ap\ (ap\ (ap \\
(ap\ (ap\ (c\_2Edft\_2EDFT\ A\_27b\ A\_27a)\ V0G)\ V1f)\ V2seen)\ (c\_2Elist\_2ENIL \\
A\_27a))\ V3acc) = V3acc) \wedge ((ap\ (ap\ (ap\ (ap\ (ap\ (c\_2Edft\_2EDFT\ A\_27b \\
A\_27a)\ V0G)\ V1f)\ V2seen)\ (ap\ (ap\ (c\_2Elist\_2ECONS\ A\_27a)\ V4visit\_\_now) \\
V5visit\_\_later))\ V3acc) = (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ A\_27b)\ (\\
ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ A\_27a)\ V4visit\_\_now)\ (ap\ (c\_2Elist\_2ELIST\_\_TO\_\_SET \\
A\_27a)\ V2seen)))\ (ap\ (ap\ (ap\ (ap\ (ap\ (c\_2Edft\_2EDFT\ A\_27b\ A\_27a) \\
V0G)\ V1f)\ V2seen)\ V5visit\_\_later)\ V3acc))\ (ap\ (ap\ (ap\ (ap\ (ap\ (c\_2Edft\_2EDFT \\
A\_27b\ A\_27a)\ V0G)\ V1f)\ (ap\ (ap\ (c\_2Elist\_2ECONS\ A\_27a)\ V4visit\_\_now) \\
V2seen))\ (ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ (ap\ V0G\ V4visit\_\_now)) \\
V5visit\_\_later))\ (ap\ (ap\ V1f\ V4visit\_\_now)\ V3acc)))))))))))
\end{gathered}
\tag{28}
$$

Assume the following.

$$
\begin{gathered}
\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\\
\forall V0P \in (((((2^{A\_27b})^{(ty\_2Elist\_2Elist\ A\_27a)})^{(ty\_2Elist\_2Elist\ A\_27a)})^{((A\_27b^{A\_27b})^{A\_27a})})^{((ty\_2Elist\_2Elist\ A\_27a)^{A- \\
((\forall V1G \in ((ty\_2Elist\_2Elist\ A\_27a)^{A\_27a}).(\forall V2f \in \\
((A\_27b^{A\_27b})^{A\_27a}).(\forall V3seen \in (ty\_2Elist\_2Elist\ A\_27a). \\
(\forall V4visit\_\_now \in A\_27a.(\forall V5visit\_\_later \in (ty\_2Elist\_2Elist \\
A\_27a).(\forall V6acc \in A\_27b.((p\ (ap\ (ap\ (ap\ (ap\ (ap\ V0P\ V1G)\ V2f) \\
V3seen)\ (c\_2Elist\_2ENIL\ A\_27a))\ V6acc)) \wedge (((((p\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE} \\
A\_27a)\ (ap\ (\mathsf{c\_2EdirGraph\_2EParents}\ A\_27a\ A\_27a)\ V1G))) \wedge (\neg(p\ (\\
ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ A\_27a)\ V4visit\_\_now)\ (ap\ (c\_2Elist\_2ELIST\_\_TO\_\_SET \\
A\_27a)\ V3seen))))) \Rightarrow (p\ (ap\ (ap\ (ap\ (ap\ (ap\ V0P\ V1G)\ V2f)\ (ap\ (ap\ (c\_2Elist\_2ECONS \\
A\_27a)\ V4visit\_\_now)\ V3seen))\ (ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a) \\
(ap\ V1G\ V4visit\_\_now))\ V5visit\_\_later))\ (ap\ (ap\ V2f\ V4visit\_\_now) \\
V6acc)))) \wedge (((p\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ A\_27a)\ (ap\ (\mathsf{c\_2EdirGraph\_2EParents} \\
A\_27a\ A\_27a)\ V1G))) \wedge (p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ A\_27a)\ V4visit\_\_now) \\
(ap\ (c\_2Elist\_2ELIST\_\_TO\_\_SET\ A\_27a)\ V3seen)))) \Rightarrow (p\ (ap\ (ap\ (ap \\
(ap\ (ap\ V0P\ V1G)\ V2f)\ V3seen)\ V5visit\_\_later)\ V6acc)))) \Rightarrow (p\ (ap\ (\\
ap\ (ap\ (ap\ (ap\ V0P\ V1G)\ V2f)\ V3seen)\ (ap\ (ap\ (c\_2Elist\_2ECONS\ A\_27a) \\
V4visit\_\_now)\ V5visit\_\_later))\ V6acc)))))))))) \Rightarrow (\forall V7v \in \\
((ty\_2Elist\_2Elist\ A\_27a)^{A\_27a}).(\forall V8v1 \in ((A\_27b^{A\_27b})^{A\_27a}). \\
(\forall V9v2 \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V10v3 \in (ty\_2Elist\_2Elist \\
A\_27a).(\forall V11v4 \in A\_27b.(p\ (ap\ (ap\ (ap\ (ap\ (ap\ V0P\ V7v)\ V8v1) \\
V9v2)\ V10v3)\ V11v4)))))))))
\end{gathered}
\tag{29}
$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a{\Rightarrow}((\forall V0l \in (ty\_2Elist\_2Elist\ A\_27a).((ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ (c\_2Elist\_2ENIL\ A\_27a))\ V0l) = V0l)){\wedge}(\forall V1l1 \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V2l2 \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V3h \in A\_27a.((ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ (ap\ (ap\ (c\_2Elist\_2ECONS\ A\_27a)\ V3h)\ V1l1))\ V2l2) = (ap\ (ap\ (c\_2Elist\_2ECONS\ A\_27a)\ V3h)\ (ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ V1l1)\ V2l2)))))))) \tag{30}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a{\Rightarrow}((\forall V0l1 \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V1l2 \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V2l3 \in (ty\_2Elist\_2Elist\ A\_27a).(((ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ V0l1)\ V1l2) = (ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ V0l1)\ V2l3)){\Leftrightarrow}(V1l2 = V2l3))))){\wedge}(\forall V3l1 \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V4l2 \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V5l3 \in (ty\_2Elist\_2Elist\ A\_27a).(((ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ V4l2)\ V3l1) = (ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ V5l3)\ V3l1)){\Leftrightarrow}(V4l2 = V5l3)))))) \tag{31}$$

Assume the following.

$$(\forall V0t \in 2.((\neg(\neg(p\ V0t))){\Leftrightarrow}(p\ V0t))) \tag{32}$$

Assume the following.

$$(\forall V0A \in 2.((p\ V0A){\Rightarrow}((\neg(p\ V0A)){\Rightarrow}False))) \tag{33}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((p\ V0A){\vee}(p\ V1B))){\Rightarrow}False){\Leftrightarrow}(((p\ V0A){\Rightarrow}False){\Rightarrow}((\neg(p\ V1B)){\Rightarrow}False))))) \tag{34}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((\neg(p\ V0A)){\vee}(p\ V1B))){\Rightarrow}False){\Leftrightarrow}((p\ V0A){\Rightarrow}((\neg(p\ V1B)){\Rightarrow}False))))) \tag{35}$$

Assume the following.

$$(\forall V0A \in 2.(((\neg(p\ V0A)){\Rightarrow}False){\Rightarrow}(((p\ V0A){\Rightarrow}False){\Rightarrow}False))) \tag{36}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p){\Leftrightarrow}((p\ V1q){\Leftrightarrow}(p\ V2r))){\Leftrightarrow}(((p\ V0p){\vee}((p\ V1q){\vee}(p\ V2r))){\wedge}(((p\ V0p){\vee}((\neg(p\ V2r)){\vee}(\neg(p\ V1q)))){\wedge}(((p\ V1q){\vee}((\neg(p\ V2r)){\vee}(\neg(p\ V0p)))){\wedge}((p\ V2r){\vee}((\neg(p\ V1q)){\vee}(\neg(p\ V0p))))))))))) \tag{37}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\wedge(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee((\neg(p\ V1q))\vee(\neg(p\ V2r))))\wedge(((p\ V1q)\vee(\neg(p\ V0p)))\wedge((p\ V2r)\vee(\neg(p\ V0p))))))))) \tag{38}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\vee(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee(\neg(p\ V1q)))\wedge(((p\ V0p)\vee(\neg(p\ V2r)))\wedge((p\ V1q)\vee((p\ V2r)\vee(\neg(p\ V0p))))))))) \tag{39}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\Rightarrow(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee(p\ V1q))\wedge(((p\ V0p)\vee(\neg(p\ V2r)))\wedge((\neg(p\ V1q))\vee((p\ V2r)\vee(\neg(p\ V0p))))))))) \tag{40}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(((p\ V0p)\Leftrightarrow(\neg(p\ V1q)))\Leftrightarrow(((p\ V0p)\vee(p\ V1q))\wedge((\neg(p\ V1q))\vee(\neg(p\ V0p))))))) \tag{41}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(\forall V3s \in 2.(((p\ V0p)\Leftrightarrow(p\ (ap\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2ECOND}\ 2)\ V1q)\ V2r)\ V3s)))\Leftrightarrow(((p\ V0p)\vee((p\ V1q)\vee(\neg(p\ V3s))))\wedge(((p\ V0p)\vee((\neg(p\ V2r))\vee(\neg(p\ V1q))))\wedge(((p\ V0p)\vee((\neg(p\ V2r))\vee(\neg(p\ V3s))))\wedge(((\neg(p\ V1q))\vee((p\ V2r)\vee(\neg(p\ V0p))))\wedge((p\ V1q)\vee((p\ V3s)\vee(\neg(p\ V0p)))))))))))) \tag{42}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\Rightarrow(p\ V1q)))\Rightarrow(p\ V0p)))) \tag{43}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\Rightarrow(p\ V1q)))\Rightarrow(\neg(p\ V1q))))) \tag{44}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\vee(p\ V1q)))\Rightarrow(\neg(p\ V0p))))) \tag{45}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\vee(p\ V1q)))\Rightarrow(\neg(p\ V1q))))) \tag{46}$$

Assume the following.

$$(\forall V0p \in 2.((\neg(\neg(p\ V0p)))\Rightarrow(p\ V0p))) \tag{47}$$

Theorem 1

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0G \in ((ty\_2Elist\_2Elist\ A\_27a)^{A\_27a}).(\forall V1f \in (((ty\_2Elist\_2Elist\ A\_27a)^{(ty\_2Elist\_2Elist\ A\_27a)})^{A\_27a}).(\forall V2seen \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V3to\_\_visit \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V4acc \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V5a \in (ty\_2Elist\_2Elist\ A\_27a).(\forall V6b \in (ty\_2Elist\_2Elist\ A\_27a).(((p\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EFINITE}\ A\_27a)\ (ap\ (\mathsf{c\_2EdirGraph\_2EParents}\ A\_27a\ A\_27a)\ V0G)))\wedge((V1f = (c\_2Elist\_2ECONS\ A\_27a))\wedge(V4acc = (ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ V5a)\ V6b))))\Rightarrow((ap\ (ap\ (ap\ (ap\ (ap\ (c\_2Edft\_2EDFT\ (ty\_2Elist\_2Elist\ A\_27a)\ A\_27a)\ V0G)\ V1f)\ V2seen)\ V3to\_\_visit)\ V4acc) = (ap\ (ap\ (c\_2Elist\_2EAPPEND\ A\_27a)\ (ap\ (ap\ (ap\ (ap\ (ap\ (c\_2Edft\_2EDFT\ (ty\_2Elist\_2Elist\ A\_27a)\ A\_27a)\ V0G)\ V1f)\ V2seen)\ V3to\_\_visit)\ V5a))\ V6b))))))))))$$