thm_2EquantHeuristics_2EGUESS__RULES__FORALL______NEW__ (TMQWBR6nfaQedqgxfjuTvz65b92Q2uoCfC7)

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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* $\iota \Rightarrow \iota$.

Definition 2 *We define* c_2Emin_2E_3D *to be* $\lambda A.\lambda x \in A.\lambda y \in A.inj\_\_o\ (x = y)$ *of type* $\iota \Rightarrow \iota$.

Definition 3 *We define* c_2Ebool_2ET *to be* $(ap\ (ap\ (\mathsf{c\_2Emin\_2E\_3D}\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V$

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

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

Let $c\_2Epair\_2EFST : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2EFST\ A\_27a\ A\_27b \in (A\_27a^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)}) \tag{2}$$

Let $c\_2Epair\_2ESND : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2ESND\ A\_27a\ A\_27b \in (A\_27b^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)}) \tag{3}$$

Definition 4 *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 5 *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 6 *We define* c_2Ebool_2E_2F_5C *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V2t \in$

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

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2EABS\_\_prod\ A\_27a\ A\_27b \in ((ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)^{((2^{A\_27b})^{A\_27a})}) \tag{4}$$

Definition 7 *We define* c_2Epair_2E_2C *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0x \in A\_27a.\lambda V1y \in A\_27b.(ap\ (c\_2E$

Definition 8 *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 A

Definition 9 *We define* c_2Ebool_2EF *to be* $(ap$ (c_2Ebool_2E_21 2) $(\lambda V0t \in 2.V0t))$.

Definition 10 *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 11 *We define* c_2EquantHeuristics_2EGUESS__FORALL__GAP *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0i \in (A\_27b^{A\_27a}).\lambda V1P \in (2^{A\_27b}).(ap$ (c_2Ebool_2E_21 $A\_27b)$ $(\lambda V2v \in A\_27b.(a$

Definition 12 *We define* c_2EquantHeuristics_2EGUESS__EXISTS__GAP *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0i \in (A\_27b^{A\_27a}).\lambda V1P \in (2^{A\_27b}).(ap$ (c_2Ebool_2E_21 $A\_27b)$ $(\lambda V2v \in A\_27b.(a$

Definition 13 *We define* c_2EquantHeuristics_2EGUESS__FORALL__POINT *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0i \in (A\_27b^{A\_27a}).\lambda V1P \in (2^{A\_27b}).(ap$ (c_2Ebool_2E_21 $A\_27a)$ $(\lambda V2fv \in A\_2$

Definition 14 *We define* c_2EquantHeuristics_2EGUESS__EXISTS__POINT *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0i \in (A\_27b^{A\_27a}).\lambda V1P \in (2^{A\_27b}).(ap$ (c_2Ebool_2E_21 $A\_27a)$ $(\lambda V2fv \in A\_27a.$

Definition 15 *We define* c_2EquantHeuristics_2EGUESS__FORALL *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0i \in (A\_2$

Definition 16 *We define* c_2EquantHeuristics_2EGUESS__EXISTS *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0i \in (A\_27$

Definition 17 *We define* c_2Ebool_2E_5C_2F *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap$ (c_2Ebool_2E_21 2) $(\lambda V2t \in$

Assume the following.

$$True \tag{5}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(((p\ V0t1) \Rightarrow (p\ V1t2)) \Rightarrow (((p\ V1t2) \Rightarrow (p\ V0t1)) \Rightarrow ((p\ V0t1) \Leftrightarrow (p\ V1t2)))))) \tag{6}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0t \in 2.((\forall V1x \in A\_27a.(p\ V0t)) \Leftrightarrow (p\ V0t))) \tag{7}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0t \in 2.((\exists V1x \in A\_27a.(p\ V0t)) \Leftrightarrow (p\ V0t))) \tag{8}$$

Assume the following.

$$(\forall V0t \in 2.(((True \wedge (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge ((((p\ V0t) \wedge True) \Leftrightarrow (p\ V0t)) \wedge (((False \wedge (p\ V0t)) \Leftrightarrow False) \wedge ((((p\ V0t) \wedge False) \Leftrightarrow False) \wedge (((p\ V0t) \wedge (p\ V0t)) \Leftrightarrow (p\ V0t))))))) \tag{9}$$

Assume the following.

$$(\forall V0t \in 2.(((True \Rightarrow (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge ((((p\ V0t) \Rightarrow True) \Leftrightarrow True) \wedge (((False \Rightarrow (p\ V0t)) \Leftrightarrow True) \wedge ((((p\ V0t) \Rightarrow (p\ V0t)) \Leftrightarrow True) \wedge (((p\ V0t) \Rightarrow False) \Leftrightarrow (\neg (p\ V0t)))))))) \tag{10}$$

Assume the following.

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

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.(\forall V1y \in A\_27a.((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \tag{12}$$

Assume the following.

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

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0P \in (2^{A\_27a}).((\neg(\forall V1x \in A\_27a.(p\ (ap\ V0P\ V1x)))) \Leftrightarrow (\exists V2x \in A\_27a.(\neg(p\ (ap\ V0P\ V2x)))))) \tag{14}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(\forall V2t3 \in 2.(((p\ V0t1) \Rightarrow ((p\ V1t2) \Rightarrow (p\ V2t3))) \Leftrightarrow (((p\ V0t1) \wedge (p\ V1t2)) \Rightarrow (p\ V2t3)))))) \tag{15}$$

Assume the following.

$$(\forall V0x \in 2.(\forall V1x\_27 \in 2.(\forall V2y \in 2.(\forall V3y\_27 \in 2.((((p\ V0x) \Leftrightarrow (p\ V1x\_27)) \wedge ((p\ V1x\_27) \Rightarrow ((p\ V2y) \Leftrightarrow (p\ V3y\_27)))) \Rightarrow (((p\ V0x) \Rightarrow (p\ V2y)) \Leftrightarrow ((p\ V1x\_27) \Rightarrow (p\ V3y\_27)))))))) \tag{16}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0x \in A\_27a.(\forall V1y \in A\_27b.((ap\ (c\_2Epair\_2EFST\ A\_27a\ A\_27b)\ (ap\ (ap\ (\mathsf{c\_2Epair\_2E\_2C}\ A\_27a\ A\_27b)\ V0x)\ V1y)) = V0x))) \tag{17}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0x \in A\_27a.(\forall V1y \in A\_27b.((ap\ (c\_2Epair\_2ESND\ A\_27a\ A\_27b)\ (ap\ (ap\ (\mathsf{c\_2Epair\_2E\_2C}\ A\_27a\ A\_27b)\ V0x)\ V1y)) = V1y))) \tag{18}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0P \in (2^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)}).((\exists V1p \in (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b).(p\ (ap\ V0P\ V1p))) \Leftrightarrow (\exists V2p\_\_1 \in A\_27a.(\exists V3p\_\_2 \in A\_27b.(p\ (ap\ V0P\ (ap\ (ap\ (\mathsf{c\_2Epair\_2E\_2C}\ A\_27a\ A\_27b)\ V2p\_\_1)\ V3p\_\_2))))))) \tag{19}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0P \in (2^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)}).((\forall V1p \in (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b).(p\ (ap\ V0P\ V1p))) \Leftrightarrow (\forall V2p\_\_1 \in A\_27a.(\forall V3p\_\_2 \in A\_27b.(p\ (ap\ V0P\ (ap\ (ap\ (\mathsf{c\_2Epair\_2E\_2C}\ A\_27a\ A\_27b)\ V2p\_\_1)\ V3p\_\_2))))))) \tag{20}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0i \in (A\_27b^{A\_27a}).(\forall V1P \in (2^{A\_27b}).((((p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_EXISTS}\ A\_27a\ A\_27b)\ V0i)\ V1P)) \Leftrightarrow (\forall V2v \in A\_27b.((p\ (ap\ V1P\ V2v)) \Rightarrow (\exists V3fv \in A\_27a.(p\ (ap\ V1P\ (ap\ V0i\ V3fv))))))) \wedge ((p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_FORALL}\ A\_27a\ A\_27b)\ V0i)\ V1P)) \Leftrightarrow (\forall V4v \in A\_27b.((\neg(p\ (ap\ V1P\ V4v))) \Rightarrow (\exists V5fv \in A\_27a.(\neg(p\ (ap\ V1P\ (ap\ V0i\ V5fv))))))))) \wedge ((\forall V6i \in (A\_27b^{A\_27a}).(\forall V7P \in (2^{A\_27b}).((p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_EXISTS\_\_POINT}\ A\_27a\ A\_27b)\ V6i)\ V7P)) \Leftrightarrow (\forall V8fv \in A\_27a.(p\ (ap\ V7P\ (ap\ V6i\ V8fv))))))) \wedge ((\forall V9i \in (A\_27b^{A\_27a}).(\forall V10P \in (2^{A\_27b}).((p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_FORALL\_\_POINT}\ A\_27a\ A\_27b)\ V9i)\ V10P)) \Leftrightarrow (\forall V11fv \in A\_27a.(\neg(p\ (ap\ V10P\ (ap\ V9i\ V11fv)))))))) \wedge ((\forall V12i \in (A\_27b^{A\_27a}).(\forall V13P \in (2^{A\_27b}).((p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_EXISTS\_\_GAP}\ A\_27a\ A\_27b)\ V12i)\ V13P)) \Leftrightarrow (\forall V14v \in A\_27b.((p\ (ap\ V13P\ V14v)) \Rightarrow (\exists V15fv \in A\_27a.(V14v = (ap\ V12i\ V15fv)))))))) \wedge (\forall V16i \in (A\_27b^{A\_27a}). (\forall V17P \in (2^{A\_27b}).((p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_FORALL\_\_GAP}\ A\_27a\ A\_27b)\ V16i)\ V17P)) \Leftrightarrow (\forall V18v \in A\_27b.((\neg(p\ (ap\ V17P\ V18v))) \Rightarrow (\exists V19fv \in A\_27a.(V18v = (ap\ V16i\ V19fv))))))))))))) \tag{21}$$

Assume the following.

$$(\forall V0t \in 2.((\neg(\neg(p\ V0t))) \Leftrightarrow (p\ V0t))) \tag{22}$$

Assume the following.

$$(\forall V0A \in 2.((p\ V0A) \Rightarrow ((\neg(p\ V0A)) \Rightarrow False))) \tag{23}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((p\ V0A) \vee (p\ V1B))) \Rightarrow False) \Leftrightarrow (((p\ V0A) \Rightarrow False) \Rightarrow ((\neg(p\ V1B)) \Rightarrow False))))) \tag{24}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((\neg(p\ V0A))\vee(p\ V1B)))\Rightarrow False)\Leftrightarrow ((p\ V0A)\Rightarrow((\neg(p\ V1B))\Rightarrow False))))) \tag{25}$$

Assume the following.

$$(\forall V0A \in 2.(((\neg(p\ V0A))\Rightarrow False)\Rightarrow(((p\ V0A)\Rightarrow False)\Rightarrow False))) \tag{26}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\Leftrightarrow(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee((p\ V1q)\vee(p\ V2r)))\wedge(((p\ V0p)\vee((\neg(p\ V2r))\vee(\neg(p\ V1q))))\wedge(((p\ V1q)\vee((\neg(p\ V2r))\vee(\neg(p\ V0p))))\wedge((p\ V2r)\vee ((\neg(p\ V1q))\vee(\neg(p\ V0p)))))))))))) \tag{27}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\vee(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee(\neg(p\ V1q)))\wedge(((p\ V0p)\vee(\neg(p\ V2r)))\wedge ((p\ V1q)\vee((p\ V2r)\vee(\neg(p\ V0p)))))))))) \tag{28}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\Rightarrow(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee(p\ V1q))\wedge(((p\ V0p)\vee(\neg(p\ V2r)))\wedge((\neg(p\ V1q))\vee((p\ V2r)\vee(\neg(p\ V0p)))))))))) \tag{29}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(((p\ V0p)\Leftrightarrow(\neg(p\ V1q)))\Leftrightarrow(((p\ V0p)\vee (p\ V1q))\wedge((\neg(p\ V1q))\vee(\neg(p\ V0p))))))) \tag{30}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\Rightarrow(p\ V1q)))\Rightarrow(p\ V0p)))) \tag{31}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\Rightarrow(p\ V1q)))\Rightarrow(\neg(p\ V1q))))) \tag{32}$$

Theorem 1

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow \forall A\_27c.\ nonempty\ A\_27c \Rightarrow (\forall V0iy \in ((A\_27c^{A\_27b})^{A\_27a}).(\forall V1P \in ((2^{A\_27a})^{A\_27c}).(((\forall V2y \in A\_27a.(p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_FORALL\_\_POINT}\ A\_27b\ A\_27c)\ (ap\ V0iy\ V2y))\ (\lambda V3x \in A\_27c.(ap\ (ap\ V1P\ V3x)\ V2y))))) \Rightarrow (p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_FORALL\_\_POINT}\ (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)\ A\_27c)\ (\lambda V4fv \in (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b).(ap\ (ap\ V0iy\ (ap\ (c\_2Epair\_2EFST\ A\_27a\ A\_27b)\ V4fv))\ (ap\ (c\_2Epair\_2ESND\ A\_27a\ A\_27b)\ V4fv))))\ (\lambda V5x \in A\_27c.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ A\_27a)\ (\lambda V6y \in A\_27a.(ap\ (ap\ V1P\ V5x)\ V6y)))))))) \wedge (((\forall V7y \in A\_27a.(p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_FORALL}\ A\_27b\ A\_27c)\ (ap\ V0iy\ V7y))\ (\lambda V8x \in A\_27c.(ap\ (ap\ V1P\ V8x)\ V7y))))) \Rightarrow (p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_FORALL}\ (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)\ A\_27c)\ (\lambda V9fv \in (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b).(ap\ (ap\ V0iy\ (ap\ (c\_2Epair\_2EFST\ A\_27a\ A\_27b)\ V9fv))\ (ap\ (c\_2Epair\_2ESND\ A\_27a\ A\_27b)\ V9fv))))\ (\lambda V10x \in A\_27c.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ A\_27a)\ (\lambda V11y \in A\_27a.(ap\ (ap\ V1P\ V10x)\ V11y)))))))) \wedge (((\forall V12y \in A\_27a.(p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_FORALL\_\_GAP}\ A\_27b\ A\_27c)\ (ap\ V0iy\ V12y))\ (\lambda V13x \in A\_27c.(ap\ (ap\ V1P\ V13x)\ V12y))))) \Rightarrow (p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_FORALL\_\_GAP}\ (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)\ A\_27c)\ (\lambda V14fv \in (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b).(ap\ (ap\ V0iy\ (ap\ (c\_2Epair\_2EFST\ A\_27a\ A\_27b)\ V14fv))\ (ap\ (c\_2Epair\_2ESND\ A\_27a\ A\_27b)\ V14fv))))\ (\lambda V15x \in A\_27c.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ A\_27a)\ (\lambda V16y \in A\_27a.(ap\ (ap\ V1P\ V15x)\ V16y)))))))) \wedge ((\forall V17y \in A\_27a.(p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_EXISTS\_\_GAP}\ A\_27b\ A\_27c)\ (ap\ V0iy\ V17y))\ (\lambda V18x \in A\_27c.(ap\ (ap\ V1P\ V18x)\ V17y))))) \Rightarrow (p\ (ap\ (ap\ (\mathsf{c\_2EquantHeuristics\_2EGUESS\_\_EXISTS\_\_GAP}\ (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)\ A\_27c)\ (\lambda V19fv \in (ty\_2Epair\_2Eprod\ A\_27a\ A\_27b).(ap\ (ap\ V0iy\ (ap\ (c\_2Epair\_2EFST\ A\_27a\ A\_27b)\ V19fv))\ (ap\ (c\_2Epair\_2ESND\ A\_27a\ A\_27b)\ V19fv))))\ (\lambda V20x \in A\_27c.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ A\_27a)\ (\lambda V21y \in A\_27a.(ap\ (ap\ V1P\ V20x)\ V21y))))))))))))$$