

thm\_2Eordinal\_2EordEXP\_\_MUL  
(TMYzT3n28rU3Yk4NG6hY41G29WivnicV8Fy)

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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  $c\_2Ebool\_2E\_ET$  to be  $(ap (ap (c\_2Emin\_2E\_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

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

$$nonempty\ ty\_2Eone\_2Eone \tag{1}$$

**Definition 3** 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 4** We define  $c\_2Eone\_2Eone$  to be  $(ap (c\_2Emin\_2E\_40 ty\_2Eone\_2Eone) (\lambda V0x \in ty\_2Eone\_2Eone))$

**Definition 5** We define  $c\_2Ebool\_2E\_21$  to be  $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap (ap (c\_2Emin\_2E\_3D (2^{A\_27a}))))$

**Definition 6** We define  $c\_2Ebool\_2E\_EF$  to be  $(ap (c\_2Ebool\_2E\_21 2) (\lambda V0t \in 2.V0t))$ .

**Definition 7** 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  $\iota$ .

**Definition 8** We define  $c\_2Ebool\_2E\_7E$  to be  $(\lambda V0t \in 2.(ap (ap c\_2Emin\_2E\_3D\_3D\_3E V0t) c\_2Ebool\_2E\_EF))$

**Definition 9** We define  $c\_2Ebool\_2E\_2F\_5C$  to be  $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap (c\_2Ebool\_2E\_21 2) (\lambda V2t \in 2.V2t))))$

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

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty\_2Esum\_2Esum\ A0\ A1) \tag{2}$$

Let  $c\_2Esum\_2EABS\_sum : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Esum\_2EABS\_sum\ A\_27a\ A\_27b \in ((ty\_2Esum\_2Esum\ A\_27a\ A\_27b)^{((2^{A\_27b})^{A\_27a})^2}) \tag{3}$$

**Definition 10** We define  $c\_Esum\_2EINR$  to be  $\lambda A\_27a : \iota. \lambda A\_27b : \iota. \lambda V0e \in A\_27b. (ap (c\_Esum\_2EABS$   
Let  $ty\_2Eoption\_2Eoption : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A0. nonempty A0 \Rightarrow nonempty (ty\_2Eoption\_2Eoption A0) \quad (4)$$

Let  $c\_2Eoption\_2Eoption\_ABS : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A\_27a. nonempty A\_27a \Rightarrow c\_2Eoption\_2Eoption\_ABS A\_27a \in ((ty\_2Eoption\_2Eoption A\_27a)^{(ty\_2Esum\_2Esum A\_27a ty\_2Eone\_2Eone)}) \quad (5)$$

**Definition 11** We define  $c\_2Eoption\_2ENONE$  to be  $\lambda A\_27a : \iota. (ap (c\_2Eoption\_2Eoption\_ABS A\_27a) (c\_2Eone\_2Eone$

Let  $ty\_2Eenum\_2Eenum : \iota$  be given. Assume the following.

$$nonempty ty\_2Eenum\_2Eenum \quad (6)$$

Let  $ty\_2Ewellorder\_2Ewellorder : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A0. nonempty A0 \Rightarrow nonempty (ty\_2Ewellorder\_2Ewellorder A0) \quad (7)$$

Let  $ty\_2Eordinal\_2Eordinal : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A0. nonempty A0 \Rightarrow nonempty (ty\_2Eordinal\_2Eordinal A0) \quad (8)$$

Let  $c\_2Eordinal\_2Eordinal\_REP\_CLASS : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A\_27a. nonempty A\_27a \Rightarrow c\_2Eordinal\_2Eordinal\_REP\_CLASS A\_27a \in ((2^{(ty\_2Ewellorder\_2Ewellorder (ty\_2Esum\_2Esum ty\_2Eenum\_2Eenum A\_27a))})^{(ty\_2Eordinal\_2Eordinal A\_27a)}) \quad (9)$$

**Definition 12** We define  $c\_2Eordinal\_2Eordinal\_REP$  to be  $\lambda A\_27a : \iota. \lambda V0a \in (ty\_2Eordinal\_2Eordinal A\_27a)$

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

$$\forall A0. nonempty A0 \Rightarrow \forall A1. nonempty A1 \Rightarrow nonempty (ty\_2Epair\_2Eprod A0 A1) \quad (10)$$

Let  $c\_2Ewellorder\_2Ewellorder\_REP : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A\_27a. nonempty A\_27a \Rightarrow c\_2Ewellorder\_2Ewellorder\_REP A\_27a \in ((2^{(ty\_2Epair\_2Eprod A\_27a A\_27a)})^{(ty\_2Ewellorder\_2Ewellorder A\_27a)}) \quad (11)$$

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  $\lambda A\_27a : \iota. \lambda A\_27b : \iota. \lambda V0x \in A\_27a. \lambda V1y \in A\_27b. (ap (c\_2Epair\_2EABS\_prod$

**Definition 14** 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  $c\_2Epair\_2ESND : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2ESND \\ A\_27a\ A\_27b \in (A\_27b^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)}) \end{aligned} \quad (13)$$

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

$$\begin{aligned} \forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2EFST \\ A\_27a\ A\_27b \in (A\_27a^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)}) \end{aligned} \quad (14)$$

**Definition 15** We define  $c\_2Epair\_2EUNCURRY$  to be  $\lambda A\_27a : \iota. \lambda A\_27b : \iota. \lambda A\_27c : \iota. \lambda V0f \in ((A\_27c^{A\_27a})$

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

$$\begin{aligned} \forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epred\_set\_2EGSPEC \\ A\_27a\ A\_27b \in ((2^{A\_27a})^{(ty\_2Epair\_2Eprod\ A\_27a\ 2)^{A\_27b}}) \end{aligned} \quad (15)$$

**Definition 16** We define  $c\_2Eset\_relation\_2Estrict$  to be  $\lambda A\_27a : \iota. \lambda V0r \in (2^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27a)})$

**Definition 17** We define  $c\_2Ewellorder\_2Eiseg$  to be  $\lambda A\_27a : \iota. \lambda V0w \in (ty\_2Ewellorder\_2Ewellorder\ A\_27a)$

**Definition 18** We define  $c\_2Eset\_relation\_2Errestrict$  to be  $\lambda A\_27a : \iota. \lambda V0r \in (2^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27a)})$

Let  $c\_2Ewellorder\_2Ewellorder\_ABS : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Ewellorder\_2Ewellorder\_ABS \\ A\_27a \in ((ty\_2Ewellorder\_2Ewellorder\ A\_27a)^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27a)}) \end{aligned} \quad (16)$$

**Definition 19** We define  $c\_2Ewellorder\_2Ewobound$  to be  $\lambda A\_27a : \iota. \lambda V0x \in A\_27a. \lambda V1w \in (ty\_2Ewellorder$

**Definition 20** 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 21** We define  $c\_2Eset\_relation\_2Erangle$  to be  $\lambda A\_27a : \iota. \lambda A\_27b : \iota. \lambda V0r \in (2^{(ty\_2Epair\_2Eprod\ A$

**Definition 22** We define  $c\_2Eset\_relation\_2Edomain$  to be  $\lambda A\_27a : \iota. \lambda A\_27b : \iota. \lambda V0r \in (2^{(ty\_2Epair\_2Eprod$

**Definition 23** 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 24** We define  $c\_2Epred\_set\_2EUNION$  to be  $\lambda A\_27a : \iota. \lambda V0s \in (2^{A\_27a}). \lambda V1t \in (2^{A\_27a}). (ap\ (c$

**Definition 25** We define  $c\_2Ewellorder\_2EelsOf$  to be  $\lambda A\_27a : \iota. \lambda V0w \in (ty\_2Ewellorder\_2Ewellorder\ A$

**Definition 26** We define  $c\_2Ewellorder\_2Eorderiso$  to be  $\lambda A\_27a : \iota. \lambda A\_27b : \iota. \lambda V0w1 \in (ty\_2Ewellorder\_2E$

**Definition 27** We define  $c\_2Ewellorder\_2Eorderlt$  to be  $\lambda A\_27a : \iota. \lambda A\_27b : \iota. \lambda V0w1 \in (ty\_2Ewellorder\_2E$

**Definition 28** We define  $c\_2Eordinal\_2Eordlt$  to be  $\lambda A\_27a : \iota.\lambda V0T1 \in (ty\_2Eordinal\_2Eordinal A\_27a).$

**Definition 29** We define  $c\_2Eordinal\_2Epreds$  to be  $\lambda A\_27a : \iota.\lambda V0w \in (ty\_2Eordinal\_2Eordinal A\_27a).$

**Definition 30** We define  $c\_2Epred\_set\_2EEMPTY$  to be  $\lambda A\_27a : \iota.(\lambda V0x \in A\_27a.c\_2Ebool\_2EF).$

**Definition 31** We define  $c\_2Epred\_set\_2EINSERT$  to be  $\lambda A\_27a : \iota.\lambda V0x \in A\_27a.\lambda V1s \in (2^{A\_27a}).$

**Definition 32** We define  $c\_2Eset\_relation\_2Emaximal\_elements$  to be  $\lambda A\_27a : \iota.\lambda V0xs \in (2^{A\_27a}).\lambda V1r \in$

**Definition 33** We define  $c\_2Esum\_2EINL$  to be  $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0e \in A\_27a.$

**Definition 34** We define  $c\_2Eoption\_2ESOME$  to be  $\lambda A\_27a : \iota.\lambda V0x \in A\_27a.$

**Definition 35** 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 36** We define  $c\_2Eoption\_2ESOME$  to be  $\lambda A\_27a : \iota.\lambda V0P \in (2^{A\_27a}).$

**Definition 37** We define  $c\_2Eordinal\_2Eomax$  to be  $\lambda A\_27a : \iota.\lambda V0s \in (2^{(ty\_2Eordinal\_2Eordinal A\_27a)}).$

**Definition 38** We define  $c\_2Eordinal\_2Eoleast$  to be  $\lambda A\_27a : \iota.\lambda V0P \in (2^{(ty\_2Eordinal\_2Eordinal A\_27a)}).$

**Definition 39** We define  $c\_2Eordinal\_2EordSUC$  to be  $\lambda A\_27a : \iota.\lambda V0a \in (ty\_2Eordinal\_2Eordinal A\_27a)$

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

$$c\_2Enum\_2EZERO\_REP \in \omega \tag{17}$$

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

$$c\_2Enum\_2EABS\_num \in (ty\_2Enum\_2Enum^{\omega}) \tag{18}$$

**Definition 40** We define  $c\_2Enum\_2E0$  to be  $(ap c\_2Enum\_2EABS\_num c\_2Enum\_2EZERO\_REP).$

**Definition 41** We define  $c\_2Earithmetic\_2EZERO$  to be  $c\_2Enum\_2E0.$

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

$$c\_2Enum\_2EREP\_num \in (\omega^{ty\_2Enum\_2Enum}) \tag{19}$$

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

$$c\_2Enum\_2ESUC\_REP \in (\omega^{\omega}) \tag{20}$$

**Definition 42** We define  $c\_2Enum\_2ESUC$  to be  $\lambda V0m \in ty\_2Enum\_2Enum.$

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

$$c\_2Earithmetic\_2E\_2B \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{21}$$

**Definition 43** We define  $c\_2Earithmetic\_2EBIT1$  to be  $\lambda V0n \in ty\_2Enum\_2Enum.$

**Definition 44** We define  $c\_2Earithmic\_2ENUMERAL$  to be  $\lambda V0x \in ty\_2Enum\_2Enum.V0x$ .

**Definition 45** We define  $c\_2Epred\_set\_2EIMAGE$  to be  $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0f \in (A\_27b^{A\_27a}).\lambda V1s \in$

**Definition 46** We define  $c\_2Epred\_set\_2EBIGUNION$  to be  $\lambda A\_27a : \iota.\lambda V0P \in (2^{(2^{A\_27a})}).(ap (c\_2Epred\_set\_2EIMAGE) P)$

**Definition 47** We define  $c\_2Eordinal\_2Esup$  to be  $\lambda A\_27a : \iota.\lambda V0ordset \in (2^{(ty\_2Eordinal\_2Eordinal A\_27a)}).$

**Definition 48** We define  $c\_2Epred\_set\_2EUNIV$  to be  $\lambda A\_27a : \iota.(\lambda V0x \in A\_27a.c\_2Ebool\_2ET)$ .

**Definition 49** We define  $c\_2Epred\_set\_2EINJ$  to be  $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0f \in (A\_27b^{A\_27a}).\lambda V1s \in (2^{A\_27a}).$

**Definition 50** We define  $c\_2Ecardinal\_2Ecardleq$  to be  $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0s1 \in (2^{A\_27a}).\lambda V1s2 \in (2^{A\_27b}).$

Let  $c\_2Eordinal\_2EordMULT : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A\_27a.nonempty A\_27a \Rightarrow c\_2Eordinal\_2EordMULT A\_27a \in ((ty\_2Eordinal\_2Eordinal A\_27a)^{(ty\_2Eordinal\_2Eordinal A\_27a)}(ty\_2Eordinal\_2Eordinal A\_27a)) \quad (22)$$

Let  $c\_2Eordinal\_2EordADD : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A\_27a.nonempty A\_27a \Rightarrow c\_2Eordinal\_2EordADD A\_27a \in ((ty\_2Eordinal\_2Eordinal A\_27a)^{(ty\_2Eordinal\_2Eordinal A\_27a)}(ty\_2Eordinal\_2Eordinal A\_27a)) \quad (23)$$

Let  $c\_2Eordinal\_2EordEXP : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A\_27a.nonempty A\_27a \Rightarrow c\_2Eordinal\_2EordEXP A\_27a \in ((ty\_2Eordinal\_2Eordinal A\_27a)^{(ty\_2Eordinal\_2Eordinal A\_27a)}(ty\_2Eordinal\_2Eordinal A\_27a)) \quad (24)$$

Let  $c\_2Eordinal\_2EfromNat : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall A\_27a.nonempty A\_27a \Rightarrow c\_2Eordinal\_2EfromNat A\_27a \in ((ty\_2Eordinal\_2Eordinal A\_27a)^{ty\_2Enum\_2Enum}) \quad (25)$$

**Definition 51** We define  $c\_2Ecombin\_2Eo$  to be  $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda A\_27c : \iota.\lambda V0f \in (A\_27b^{A\_27c}).\lambda V1g \in (A\_27c^{A\_27a}).$

**Definition 52** We define  $c\_2Eprim\_rec\_2E.3C$  to be  $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2Enum.$

Assume the following.

$$True \quad (26)$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(((p V0t1) \Rightarrow (p V1t2)) \Rightarrow (((p V1t2) \Rightarrow (p V0t1)) \Rightarrow ((p V0t1) \Leftrightarrow (p V1t2)))))) \quad (27)$$

Assume the following.

$$(\forall V0t \in 2.(False \Rightarrow (p V0t))) \quad (28)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow (\forall V0t \in 2. ((\forall V1x \in A_{.27a}.(p V0t)) \Leftrightarrow (p V0t))) \quad (29)$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2. (((True \wedge (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \wedge True) \Leftrightarrow \\ & (p V0t)) \wedge (((False \wedge (p V0t)) \Leftrightarrow False) \wedge (((p V0t) \wedge False) \Leftrightarrow False) \wedge \\ & (((p V0t) \wedge (p V0t)) \Leftrightarrow (p V0t)))))) \end{aligned} \quad (30)$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2. (((True \vee (p V0t)) \Leftrightarrow True) \wedge (((p V0t) \vee True) \Leftrightarrow True) \wedge \\ & (((False \vee (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \vee False) \Leftrightarrow (p V0t)) \wedge (((p V0t) \vee \\ & (p V0t)) \Leftrightarrow (p V0t)))))) \end{aligned} \quad (31)$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2. (((True \Rightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Rightarrow True) \Leftrightarrow \\ & True) \wedge (((False \Rightarrow (p V0t)) \Leftrightarrow True) \wedge (((p V0t) \Rightarrow (p V0t)) \Leftrightarrow True) \wedge (( \\ & (p V0t) \Rightarrow False) \Leftrightarrow \neg(p V0t)))))) \end{aligned} \quad (32)$$

Assume the following.

$$\begin{aligned} & ((\forall V0t \in 2. ((\neg(\neg(p V0t))) \Leftrightarrow (p V0t)) \wedge (((\neg True) \Leftrightarrow False) \wedge \\ & ((\neg False) \Leftrightarrow True)))) \end{aligned} \quad (33)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow (\forall V0x \in A_{.27a}.(V0x = V0x)) \quad (34)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow (\forall V0x \in A_{.27a}.((V0x = V0x) \Leftrightarrow True)) \quad (35)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow (\forall V0x \in A_{.27a}.(\forall V1y \in A_{.27a}.((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \quad (36)$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2. (((True \Leftrightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Leftrightarrow True) \Leftrightarrow \\ & (p V0t)) \wedge (((False \Leftrightarrow (p V0t)) \Leftrightarrow \neg(p V0t)) \wedge (((p V0t) \Leftrightarrow False) \Leftrightarrow \neg( \\ & p V0t)))))) \end{aligned} \quad (37)$$

Assume the following.

$$\begin{aligned} & \forall A_{.27a}.nonempty A_{.27a} \Rightarrow (\forall V0Q \in 2. (\forall V1P \in ( \\ & 2^{A_{.27a}}). ((\forall V2x \in A_{.27a}.((p (ap V1P V2x)) \vee (p V0Q))) \Leftrightarrow ((\forall V3x \in \\ & A_{.27a}.(p (ap V1P V3x))) \vee (p V0Q)))))) \end{aligned} \quad (38)$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(\forall V2t3 \in 2.(((p V0t1) \Rightarrow (p V1t2) \Rightarrow (p V2t3))) \Leftrightarrow (((p V0t1) \wedge (p V1t2)) \Rightarrow (p V2t3)))))) \quad (39)$$

Assume the following.

$$(\forall V0x \in 2.(\forall V1x_{.27} \in 2.(\forall V2y \in 2.(\forall V3y_{.27} \in 2.(((p V0x) \Leftrightarrow (p V1x_{.27})) \wedge ((p V1x_{.27}) \Rightarrow ((p V2y) \Leftrightarrow (p V3y_{.27})))))) \Rightarrow (((p V0x) \Rightarrow (p V2y)) \Leftrightarrow ((p V1x_{.27}) \Rightarrow (p V3y_{.27})))))) \quad (40)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow \forall A_{.27b}.nonempty A_{.27b} \Rightarrow \forall A_{.27c}.nonempty A_{.27c} \Rightarrow (\forall V0f \in (A_{.27c}^{A_{.27a}}).(\forall V1s \in (2^{A_{.27a}}).(\forall V2t \in (2^{A_{.27b}}).((p (ap (ap (c_{.2}Ecardinal_{.2}Ecardleq A_{.27a} A_{.27b}) V1s) V2t)) \Rightarrow (p (ap (ap (c_{.2}Ecardinal_{.2}Ecardleq A_{.27c} A_{.27b}) (ap (ap (c_{.2}Epred_{.set}_{.2}EIMAGE A_{.27a} A_{.27c}) V0f) V1s)) V2t)))))) \quad (41)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow (\forall V0x \in (ty_{.2}Eordinal_{.2}Eordinal A_{.27a}).(\forall V1w \in (ty_{.2}Eordinal_{.2}Eordinal A_{.27a}).((p (ap (ap (c_{.2}Ebool_{.2}EIN (ty_{.2}Eordinal_{.2}Eordinal A_{.27a})) V0x) (ap (c_{.2}Eordinal_{.2}Epreds A_{.27a} V1w))) \Leftrightarrow (p (ap (ap (c_{.2}Eordinal_{.2}Eordlt A_{.27a} V0x) V1w)))))) \quad (42)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow (\forall V0ord \in (ty_{.2}Eordinal_{.2}Eordinal A_{.27a}).(p (ap (ap (c_{.2}Ecardinal_{.2}Ecardleq (ty_{.2}Eordinal_{.2}Eordinal A_{.27a}) (ty_{.2}Esum_{.2}Esum ty_{.2}Enum_{.2}Enum A_{.27a})) (ap (c_{.2}Eordinal_{.2}Epreds A_{.27a} V0ord)) (c_{.2}Epred_{.set}_{.2}EUNIV (ty_{.2}Esum_{.2}Esum ty_{.2}Enum_{.2}Enum A_{.27a})))))) \quad (43)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow (\forall V0x \in (ty_{.2}Eordinal_{.2}Eordinal A_{.27a}).(((ap (c_{.2}Eordinal_{.2}Epreds A_{.27a} V0x) = (c_{.2}Epred_{.set}_{.2}EEMPTY (ty_{.2}Eordinal_{.2}Eordinal A_{.27a}))) \Leftrightarrow (V0x = (ap (c_{.2}Eordinal_{.2}EfromNat A_{.27a} c_{.2}Enum_{.2}E0)))))) \quad (44)$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0P \in (2^{(ty\_2Eordinal\_2Eordinal\ A.27a)}), \\
& ((p\ (ap\ V0P\ (ap\ (c\_2Eordinal\_2EfromNat\ A.27a)\ c\_2Enum\_2E0))) \wedge \\
& ((\forall V1a \in (ty\_2Eordinal\_2Eordinal\ A.27a).((p\ (ap\ V0P\ V1a)) \Rightarrow \\
& (p\ (ap\ V0P\ (ap\ (c\_2Eordinal\_2EordSUC\ A.27a)\ V1a)))))) \wedge (\forall V2a \in \\
& (ty\_2Eordinal\_2Eordinal\ A.27a).(((ap\ (c\_2Eordinal\_2Eomax \\
& A.27a)\ (ap\ (c\_2Eordinal\_2Epreds\ A.27a)\ V2a)) = (c\_2Eoption\_2ENONE \\
& (ty\_2Eordinal\_2Eordinal\ A.27a))) \wedge ((p\ (ap\ (ap\ (c\_2Eordinal\_2Eordlt \\
& A.27a)\ (ap\ (c\_2Eordinal\_2EfromNat\ A.27a)\ c\_2Enum\_2E0))\ V2a)) \wedge \\
& (\forall V3b \in (ty\_2Eordinal\_2Eordinal\ A.27a).((p\ (ap\ (ap\ (c\_2Eordinal\_2Eordlt \\
& A.27a)\ V3b)\ V2a)) \Rightarrow (p\ (ap\ V0P\ V3b)))))) \Rightarrow (p\ (ap\ V0P\ V2a)))))) \Rightarrow (\forall V4a \in \\
& (ty\_2Eordinal\_2Eordinal\ A.27a).(p\ (ap\ V0P\ V4a))))
\end{aligned} \tag{45}$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0x \in ty\_2Enum\_2Enum.( \\
& \forall V1y \in ty\_2Enum\_2Enum.(((ap\ (c\_2Eordinal\_2EfromNat\ A.27a) \\
& V0x) = (ap\ (c\_2Eordinal\_2EfromNat\ A.27a)\ V1y)) \Leftrightarrow (V0x = V1y))))
\end{aligned} \tag{46}$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0n \in ty\_2Enum\_2Enum.( \\
& \forall V1m \in ty\_2Enum\_2Enum.((p\ (ap\ (ap\ (c\_2Eordinal\_2Eordlt \\
& A.27a)\ (ap\ (c\_2Eordinal\_2EfromNat\ A.27a)\ V0n))\ (ap\ (c\_2Eordinal\_2EfromNat \\
& A.27a)\ V1m)))) \Leftrightarrow (p\ (ap\ (ap\ c\_2Eprim\_rec\_2E.3C\ V0n)\ V1m))))
\end{aligned} \tag{47}$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0b \in (ty\_2Eordinal\_2Eordinal \\
& A.27a).(((ap\ (ap\ (c\_2Eordinal\_2EordMULT\ A.27a)\ V0b)\ (ap\ (c\_2Eordinal\_2EfromNat \\
& A.27a)\ c\_2Enum\_2E0)) = (ap\ (c\_2Eordinal\_2EfromNat\ A.27a)\ c\_2Enum\_2E0))) \wedge \\
& ((\forall V1a \in (ty\_2Eordinal\_2Eordinal\ A.27a).((ap\ (ap\ (c\_2Eordinal\_2EordMULT \\
& A.27a)\ V0b)\ (ap\ (c\_2Eordinal\_2EordSUC\ A.27a)\ V1a)) = (ap\ (ap\ (c\_2Eordinal\_2EordADD \\
& A.27a)\ (ap\ (ap\ (c\_2Eordinal\_2EordMULT\ A.27a)\ V0b)\ V1a))\ V0b)))) \wedge \\
& (\forall V2a \in (ty\_2Eordinal\_2Eordinal\ A.27a).(((p\ (ap\ (ap\ (c\_2Eordinal\_2Eordlt \\
& A.27a)\ (ap\ (c\_2Eordinal\_2EfromNat\ A.27a)\ c\_2Enum\_2E0))\ V2a)) \wedge \\
& ((ap\ (c\_2Eordinal\_2Eomax\ A.27a)\ (ap\ (c\_2Eordinal\_2Epreds\ A.27a) \\
& V2a)) = (c\_2Eoption\_2ENONE\ (ty\_2Eordinal\_2Eordinal\ A.27a)))))) \Rightarrow \\
& ((ap\ (ap\ (c\_2Eordinal\_2EordMULT\ A.27a)\ V0b)\ V2a) = (ap\ (c\_2Eordinal\_2Esup \\
& A.27a)\ (ap\ (ap\ (c\_2Epred\_set\_2EIMAGE\ (ty\_2Eordinal\_2Eordinal \\
& A.27a)\ (ty\_2Eordinal\_2Eordinal\ A.27a))\ (ap\ (c\_2Eordinal\_2EordMULT \\
& A.27a)\ V0b))\ (ap\ (c\_2Eordinal\_2Epreds\ A.27a)\ V2a))))))
\end{aligned} \tag{48}$$



Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0z \in (ty\_2Eordinal\_2Eordinal \\
& \quad A.27a).(\forall V1x \in (ty\_2Eordinal\_2Eordinal\ A.27a).(\forall V2y \in \\
& \quad (ty\_2Eordinal\_2Eordinal\ A.27a).(((ap\ (ap\ (c\_2Eordinal\_2EordMULT \\
& \quad A.27a)\ V0z)\ V1x) = (ap\ (ap\ (c\_2Eordinal\_2EordMULT\ A.27a)\ V0z)\ V2y))) \Leftrightarrow \\
& \quad ((V0z = (ap\ (c\_2Eordinal\_2EfromNat\ A.27a)\ c\_2Enum\_2E0)) \vee (V1x = \\
& \quad \quad V2y))))))
\end{aligned} \tag{49}$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow ((\forall V0a \in (ty\_2Eordinal\_2Eordinal \\
& \quad A.27a).((ap\ (ap\ (c\_2Eordinal\_2EordEXP\ A.27a)\ V0a)\ (ap\ (c\_2Eordinal\_2EfromNat \\
& \quad A.27a)\ c\_2Enum\_2E0)) = (ap\ (c\_2Eordinal\_2EfromNat\ A.27a)\ (ap\ c\_2Earithmetic\_2ENUMERAL \\
& \quad (ap\ c\_2Earithmetic\_2EBIT1\ c\_2Earithmetic\_2EZERO)))))) \wedge ((\forall V1a \in \\
& \quad (ty\_2Eordinal\_2Eordinal\ A.27a).(\forall V2a.27 \in (ty\_2Eordinal\_2Eordinal \\
& \quad A.27a).((ap\ (ap\ (c\_2Eordinal\_2EordEXP\ A.27a)\ V1a)\ (ap\ (c\_2Eordinal\_2EordSUC \\
& \quad A.27a)\ V2a.27)) = (ap\ (ap\ (c\_2Eordinal\_2EordMULT\ A.27a)\ (ap\ (ap \\
& \quad (c\_2Eordinal\_2EordEXP\ A.27a)\ V1a)\ V2a.27))\ V1a)))) \wedge ((\forall V3a \in \\
& \quad (ty\_2Eordinal\_2Eordinal\ A.27a).(\forall V4a.27 \in (ty\_2Eordinal\_2Eordinal \\
& \quad A.27a).(((p\ (ap\ (ap\ (c\_2Eordinal\_2Eordlt\ A.27a)\ (ap\ (c\_2Eordinal\_2EfromNat \\
& \quad A.27a)\ c\_2Enum\_2E0))\ V4a.27)) \wedge ((ap\ (c\_2Eordinal\_2Eomax\ A.27a) \\
& \quad (ap\ (c\_2Eordinal\_2Epreds\ A.27a)\ V4a.27)) = (c\_2Eoption\_2ENONE \\
& \quad (ty\_2Eordinal\_2Eordinal\ A.27a)))))) \Rightarrow ((ap\ (ap\ (c\_2Eordinal\_2EordEXP \\
& \quad A.27a)\ V3a)\ V4a.27) = (ap\ (c\_2Eordinal\_2Esup\ A.27a)\ (ap\ (ap\ (c\_2Epred\_set\_2EIMAGE \\
& \quad (ty\_2Eordinal\_2Eordinal\ A.27a)\ (ty\_2Eordinal\_2Eordinal\ A.27a)) \\
& \quad (ap\ (c\_2Eordinal\_2EordEXP\ A.27a)\ V3a))\ (ap\ (c\_2Eordinal\_2Epreds \\
& \quad \quad A.27a)\ V4a.27))))))
\end{aligned} \tag{50}$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0a \in (ty\_2Eordinal\_2Eordinal \\
& \quad A.27a).(\forall V1s \in (2^{(ty\_2Eordinal\_2Eordinal\ A.27a)}).(( \\
& \quad (p\ (ap\ (ap\ (c\_2Eordinal\_2Eordlt\ A.27a)\ (ap\ (c\_2Eordinal\_2EfromNat \\
& \quad A.27a)\ c\_2Enum\_2E0))\ V0a)) \wedge ((p\ (ap\ (ap\ (c\_2Ecardinal\_2Ecardleq \\
& \quad (ty\_2Eordinal\_2Eordinal\ A.27a)\ (ty\_2Esum\_2Esum\ ty\_2Enum\_2Enum \\
& \quad A.27a))\ V1s)\ (c\_2Epred\_set\_2EUNIV\ (ty\_2Esum\_2Esum\ ty\_2Enum\_2Enum \\
& \quad A.27a)))) \wedge (\neg (V1s = (c\_2Epred\_set\_2EEMPTY\ (ty\_2Eordinal\_2Eordinal \\
& \quad A.27a)))))) \Rightarrow ((ap\ (ap\ (c\_2Eordinal\_2EordEXP\ A.27a)\ V0a)\ (ap\ (c\_2Eordinal\_2Esup \\
& \quad A.27a)\ V1s)) = (ap\ (c\_2Eordinal\_2Esup\ A.27a)\ (ap\ (ap\ (c\_2Epred\_set\_2EIMAGE \\
& \quad (ty\_2Eordinal\_2Eordinal\ A.27a)\ (ty\_2Eordinal\_2Eordinal\ A.27a)) \\
& \quad (ap\ (c\_2Eordinal\_2EordEXP\ A.27a)\ V0a))\ V1s))))))
\end{aligned} \tag{51}$$

Assume the following.

$$\begin{aligned}
& \forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in (ty\_2Eordinal\_2Eordinal \\
& \quad A\_27a).(\forall V1y \in (ty\_2Eordinal\_2Eordinal\ A\_27a).(\forall V2z \in \\
& \quad (ty\_2Eordinal\_2Eordinal\ A\_27a).((p\ (ap\ (ap\ (c\_2Eordinal\_2Eordlt \\
& \quad A\_27a)\ (ap\ (c\_2Eordinal\_2EfromNat\ A\_27a)\ c\_2Enum\_2E0))\ V0x)) \Rightarrow \\
& ((ap\ (ap\ (c\_2Eordinal\_2EordEXP\ A\_27a)\ V0x)\ (ap\ (ap\ (c\_2Eordinal\_2EordADD \\
& \quad A\_27a)\ V1y)\ V2z)) = (ap\ (ap\ (c\_2Eordinal\_2EordMULT\ A\_27a)\ (ap\ (ap \\
& \quad (c\_2Eordinal\_2EordEXP\ A\_27a)\ V0x)\ V1y))\ (ap\ (ap\ (c\_2Eordinal\_2EordEXP \\
& \quad A\_27a)\ V0x)\ V2z))))))
\end{aligned} \tag{52}$$

Assume the following.

$$\begin{aligned}
& \forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0s \in (2^{A\_27a}).(\forall V1t \in \\
& (2^{A\_27a}).((V0s = V1t) \Leftrightarrow (\forall V2x \in A\_27a.((p\ (ap\ (ap\ (c\_2Ebool\_2EIN \\
& \quad A\_27a)\ V2x)\ V0s)) \Leftrightarrow (p\ (ap\ (ap\ (c\_2Ebool\_2EIN\ A\_27a)\ V2x)\ V1t))))))
\end{aligned} \tag{53}$$

Assume the following.

$$\begin{aligned}
& \forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow ( \\
& \quad \forall V0y \in A\_27b.(\forall V1s \in (2^{A\_27a}).(\forall V2f \in (A\_27b^{A\_27a}). \\
& ((p\ (ap\ (ap\ (c\_2Ebool\_2EIN\ A\_27b)\ V0y)\ (ap\ (ap\ (c\_2Epred\_set\_2EIMAGE \\
& \quad A\_27a\ A\_27b)\ V2f)\ V1s))) \Leftrightarrow (\exists V3x \in A\_27a.((V0y = (ap\ V2f\ V3x)) \wedge \\
& \quad (p\ (ap\ (ap\ (c\_2Ebool\_2EIN\ A\_27a)\ V3x)\ V1s))))))
\end{aligned} \tag{54}$$

Assume the following.

$$\begin{aligned}
& \forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow \forall A\_27c. \\
& \quad nonempty\ A\_27c \Rightarrow (\forall V0f \in (A\_27c^{A\_27b}).(\forall V1g \in (A\_27b^{A\_27a}). \\
& \quad (\forall V2s \in (2^{A\_27a}).((ap\ (ap\ (c\_2Epred\_set\_2EIMAGE\ A\_27a \\
& \quad A\_27c)\ (ap\ (ap\ (c\_2Ecombin\_2Eo\ A\_27a\ A\_27c\ A\_27b)\ V0f)\ V1g))\ V2s) = \\
& (ap\ (ap\ (c\_2Epred\_set\_2EIMAGE\ A\_27b\ A\_27c)\ V0f)\ (ap\ (ap\ (c\_2Epred\_set\_2EIMAGE \\
& \quad A\_27a\ A\_27b)\ V1g)\ V2s))))))
\end{aligned} \tag{55}$$

Assume the following.

$$\begin{aligned}
& \forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow ( \\
& \quad \forall V0s \in (2^{A\_27a}).(\forall V1f \in (A\_27b^{A\_27a}).(((ap\ (ap\ ( \\
& \quad c\_2Epred\_set\_2EIMAGE\ A\_27a\ A\_27b)\ V1f)\ V0s) = (c\_2Epred\_set\_2EEMPTY \\
& \quad A\_27b)) \Leftrightarrow (V0s = (c\_2Epred\_set\_2EEMPTY\ A\_27a))))))
\end{aligned} \tag{56}$$

Assume the following.

$$(\forall V0n \in ty\_2Enum\_2Enum.(\neg(p\ (ap\ (ap\ c\_2Eprim\_rec\_2E\_3C \\
\quad V0n)\ c\_2Enum\_2E0)))) \tag{57}$$

Assume the following.

$$(\forall V0t \in 2.((\neg(\neg(p\ V0t))) \Leftrightarrow (p\ V0t))) \tag{58}$$

Assume the following.

$$(\forall V0A \in 2.((p V0A) \Rightarrow ((\neg(p V0A)) \Rightarrow False))) \quad (59)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((p V0A) \vee (p V1B))) \Rightarrow False) \Leftrightarrow ((p V0A) \Rightarrow False) \Rightarrow ((\neg(p V1B)) \Rightarrow False)))) \quad (60)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((\neg(p V0A)) \vee (p V1B))) \Rightarrow False) \Leftrightarrow ((p V0A) \Rightarrow ((\neg(p V1B)) \Rightarrow False)))) \quad (61)$$

Assume the following.

$$(\forall V0A \in 2.(((\neg(p V0A)) \Rightarrow False) \Rightarrow (((p V0A) \Rightarrow False) \Rightarrow False))) \quad (62)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow (p V1q) \Leftrightarrow (p V2r)) \Leftrightarrow (((p V0p) \vee ((p V1q) \vee (p V2r))) \wedge (((p V0p) \vee ((\neg(p V2r)) \vee (\neg(p V1q)))) \wedge (((p V1q) \vee ((\neg(p V2r)) \vee (\neg(p V0p)))) \wedge ((p V2r) \vee ((\neg(p V1q)) \vee (\neg(p V0p)))))))))) \quad (63)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow (p V1q) \wedge (p V2r)) \Leftrightarrow (((p V0p) \vee ((\neg(p V1q)) \vee (\neg(p V2r)))) \wedge (((p V1q) \vee (\neg(p V0p))) \wedge ((p V2r) \vee (\neg(p V0p)))))))) \quad (64)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow (p V1q) \vee (p V2r)) \Leftrightarrow (((p V0p) \vee (\neg(p V1q))) \wedge (((p V0p) \vee (\neg(p V2r))) \wedge ((p V1q) \vee ((p V2r) \vee (\neg(p V0p)))))))) \quad (65)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow (p V1q) \Rightarrow (p V2r)) \Leftrightarrow (((p V0p) \vee (p V1q)) \wedge (((p V0p) \vee (\neg(p V2r))) \wedge ((\neg(p V1q)) \vee ((p V2r) \vee (\neg(p V0p)))))))) \quad (66)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(((p V0p) \Leftrightarrow (\neg(p V1q))) \Leftrightarrow (((p V0p) \vee (p V1q)) \wedge ((\neg(p V1q)) \vee (\neg(p V0p)))))) \quad (67)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(((\neg((p V0p) \Rightarrow (p V1q))) \Rightarrow (p V0p)))) \quad (68)$$

Assume the following.

$$(\forall V0p \in 2. (\forall V1q \in 2. ((\neg((p V0p) \Rightarrow (p V1q))) \Rightarrow (\neg(p V1q)))))) \quad (69)$$

Assume the following.

$$(\forall V0p \in 2. (\forall V1q \in 2. ((\neg((p V0p) \vee (p V1q))) \Rightarrow (\neg(p V0p)))))) \quad (70)$$

Assume the following.

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

Assume the following.

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

**Theorem 1**

$$\begin{aligned} & \forall A\_27a. nonempty A\_27a \Rightarrow (\forall V0x \in (ty\_2Eordinal\_2Eordinal \\ & \quad A\_27a). (\forall V1y \in (ty\_2Eordinal\_2Eordinal A\_27a). (\forall V2z \in \\ & \quad (ty\_2Eordinal\_2Eordinal A\_27a). ((p (ap (ap (c\_2Eordinal\_2Eordlt \\ & \quad A\_27a) (ap (c\_2Eordinal\_2EfromNat A\_27a) c\_2Enum\_2E0)) V0x)) \Rightarrow \\ & \quad ((ap (ap (c\_2Eordinal\_2EordEXP A\_27a) V0x) (ap (ap (c\_2Eordinal\_2EordMULT \\ & \quad A\_27a) V1y) V2z)) = (ap (ap (c\_2Eordinal\_2EordEXP A\_27a) (ap (ap \\ & \quad (c\_2Eordinal\_2EordEXP A\_27a) V0x) V1y)) V2z)))))) \end{aligned}$$