

thm_2Ereal__topology_2ELIM__TRANSFORM__AT (TMbqeffAY3Cm9nZBpL8srp3Mcrc489S5Ppe)

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Definition 1 We define `c_2Emin_2E_3D` to be $\lambda A. \lambda x \in A. \lambda y \in A. \text{inj_o } (x = y)$ of type $\iota \Rightarrow \iota$.

Definition 2 We define `c_2Ebool_2E_2ET` to be $(\text{ap } (\text{ap } (\text{c_2Emin_2E_3D } (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

Definition 3 We define `c_2Emin_2E_40` to be $\lambda A. \lambda P \in 2^A. \text{if } (\exists x \in A. p (\text{ap } P x)) \text{ then } (\text{the } (\lambda x. x \in A \wedge p x))$ of type $\iota \Rightarrow \iota$.

Definition 4 We define `c_2Ebool_2E_3F` to be $\lambda A. \lambda 27a : \iota. (\lambda V0P \in (2^{A-27a}). (\text{ap } V0P (\text{ap } (\text{c_2Emin_2E_40 } A_27a))))$

Definition 5 We define `c_2Ecombin_2E_2EK` to be $\lambda A. \lambda 27a : \iota. \lambda A. \lambda 27b : \iota. (\lambda V0x \in A. \lambda V1y \in A. \lambda V2z \in A. \text{c_2Emin_2E_40 } (A_27a \wedge A_27b \wedge V0x = V1y \wedge V1y = V2z))$

Definition 6 We define `c_2Ecombin_2E_2ES` to be $\lambda A. \lambda 27a : \iota. \lambda A. \lambda 27b : \iota. \lambda A. \lambda 27c : \iota. (\lambda V0f \in ((A_27c^{A-27b})^{A-27a}))$

Definition 7 We define `c_2Ecombin_2E_2EI` to be $\lambda A. \lambda 27a : \iota. (\text{ap } (\text{ap } (\text{c_2Ecombin_2E_2ES } A_27a (A_27a^{A-27a})) A_27a))$

Definition 8 We define `c_2Epred__set_2EUNIV` to be $\lambda A. \lambda 27a : \iota. (\lambda V0x \in A. \lambda V1y \in A. \text{c_2Ebool_2E_2ET } (V0x = V1y))$.

Let $\text{ty_2Ereal_topology_2ENet} : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0. \text{nonempty } A0 \Rightarrow \text{nonempty } (\text{ty_2Ereal_topology_2ENet } A0) \quad (1)$$

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

$$\text{nonempty } \text{ty_2Erealax_2Ereal} \quad (2)$$

Definition 9 We define `c_2Emin_2E_3D_3D_3E` to be $\lambda P \in 2. \lambda Q \in 2. \text{inj_o } (p P \Rightarrow p Q)$ of type ι .

Definition 10 We define `c_2Ebool_2E_2E_21` to be $\lambda A. \lambda 27a : \iota. (\lambda V0P \in (2^{A-27a}). (\text{ap } (\text{ap } (\text{c_2Emin_2E_3D } (2^{A-27a})) (\lambda V1Q \in 2. \text{c_2Emin_2E_3D_3D_3E } (V0P V1Q))))$

Definition 11 We define `c_2Ebool_2E_2F_5C` to be $(\lambda V0t1 \in 2. (\lambda V1t2 \in 2. (\text{ap } (\text{c_2Ebool_2E_2E_21 } 2) (\lambda V2t \in 2. \text{c_2Ebool_2E_2E_21 } (V0t1 V2t))))$

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

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty_2Epair_2Eprod\ A0\ A1) \quad (3)$$

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

$$\forall A_27a.nonempty\ A_27a \Rightarrow \forall A_27b.nonempty\ A_27b \Rightarrow c_2Epair_2EABS_prod\ A_27a\ A_27b \in ((ty_2Epair_2Eprod\ A_27a\ A_27b)^{(2^{A_27b})^{A_27a}}) \quad (4)$$

Definition 12 We define $c_2Epair_2E_2C$ to be $\lambda A_27a : \iota.\lambda A_27b : \iota.\lambda V0x \in A_27a.\lambda V1y \in A_27b.(ap\ (c_2Epair_2EABS_prod\ A_27a\ A_27b)\ x\ y)$

Let $c_2Ereal_topology_2EDist : \iota$ be given. Assume the following.

$$c_2Ereal_topology_2EDist \in (ty_2Erealax_2Ereal^{(ty_2Epair_2Eprod\ ty_2Erealax_2Ereal\ ty_2Erealax_2Ereal)}) \quad (5)$$

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

$$nonempty\ ty_2Ehreal_2Ehreal \quad (6)$$

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

$$c_2Erealax_2Ereal_REP_CLASS \in ((2^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)})^{ty_2Erealax_2Ereal}) \quad (7)$$

Definition 13 We define $c_2Erealax_2Ereal_REP$ to be $\lambda V0a \in ty_2Erealax_2Ereal.(ap\ (c_2Emin_2E_40\ ty_2Erealax_2Ereal)\ a)$

Let $c_2Erealax_2Etreallt : \iota$ be given. Assume the following.

$$c_2Erealax_2Etreallt \in ((2^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal)}) \quad (8)$$

Definition 14 We define $c_2Erealax_2Ereal_lt$ to be $\lambda V0T1 \in ty_2Erealax_2Ereal.\lambda V1T2 \in ty_2Erealax_2Ereal.(c_2Emin_2E_40\ ty_2Erealax_2Ereal\ T1\ T2)$

Definition 15 We define $c_2Ebool_2E_EF$ to be $(ap\ (c_2Ebool_2E_21\ 2)\ (\lambda V0t \in 2.V0t))$.

Definition 16 We define $c_2Ebool_2E_7E$ to be $(\lambda V0t \in 2.(ap\ (ap\ c_2Emin_2E_3D_3D_3E\ V0t)\ c_2Ebool_2E_21)\ t)$

Definition 17 We define $c_2Ereal_2Ereal_lte$ to be $\lambda V0x \in ty_2Erealax_2Ereal.\lambda V1y \in ty_2Erealax_2Ereal.(c_2Emin_2E_40\ ty_2Erealax_2Ereal\ x\ y)$

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

$$c_2Enum_2EZERO_REP \in \omega \quad (9)$$

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

$$nonempty\ ty_2Enum_2Enum \quad (10)$$

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

$$c_2Enum_2EABS_num \in (ty_2Enum_2Enum^{\omega}) \quad (11)$$

Definition 18 We define c_2Enum_2E0 to be $(ap\ c_2Enum_2EABS_num\ c_2Enum_2EZERO_REP)$.

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

$$c_2Ereal_2Ereal_of_num \in (ty_2Erealax_2Ereal^{ty_2Enum_2Enum}) \quad (12)$$

Let $c_2Ereal_topology_2Emk_net : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} \forall A_27a.nonempty\ A_27a \Rightarrow c_2Ereal_topology_2Emk_net \\ A_27a \in ((ty_2Ereal_topology_2Enet\ A_27a)^{(2^{A_27a})^{A_27a}}) \end{aligned} \quad (13)$$

Definition 19 We define $c_2Ereal_topology_2Eat$ to be $\lambda V0a \in ty_2Erealax_2Ereal.(ap\ (c_2Ereal_topology_2Eat\ V0a))$

Definition 20 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 $c_2Ereal_topology_2Enetord : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Ereal_topology_2Enetord\ A_27a \in ((2^{A_27a})^{A_27a})^{(ty_2Ereal_topology_2Enet\ A_27a)} \quad (14)$$

Definition 21 We define $c_2Ereal_topology_2Ewithin$ to be $\lambda A_27a : \iota. \lambda V0net \in (ty_2Ereal_topology_2Ewithin\ A_27a\ V0net)$

Definition 22 We define $c_2Ebool_2E5C_2F$ to be $(\lambda V0t1 \in 2. (\lambda V1t2 \in 2. (ap\ (c_2Ebool_2E21\ 2)\ (\lambda V2t \in 2. (ap\ V2t\ V1t2))))))$

Definition 23 We define $c_2Ereal_topology_2Etrivial_limit$ to be $\lambda A_27a : \iota. \lambda V0net \in (ty_2Ereal_topology_2Etrivial_limit\ A_27a\ V0net)$

Definition 24 We define $c_2Ereal_topology_2Eeventually$ to be $\lambda A_27a : \iota. \lambda V0p \in (2^{A_27a}). \lambda V1net \in (ty_2Ereal_topology_2Eeventually\ A_27a\ V0p\ V1net)$

Definition 25 We define $c_2Ereal_topology_2E2D_2D_3E$ to be $\lambda A_27a : \iota. \lambda V0f \in (ty_2Erealax_2Ereal^{A_27a})$

Assume the following.

$$True \quad (15)$$

Assume the following.

$$(\forall V0t1 \in 2. (\forall V1t2 \in 2. ((p\ V0t1) \Rightarrow (p\ V1t2)) \Rightarrow ((p\ V1t2) \Rightarrow (p\ V0t1)) \Rightarrow ((p\ V0t1) \Leftrightarrow (p\ V1t2)))) \quad (16)$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0t \in 2. ((\forall V1x \in A_27a. (p\ V0t)) \Leftrightarrow (p\ V0t))) \quad (17)$$

Assume the following.

$$(\forall V0t1 \in 2. (\forall V1t2 \in 2. (\forall V2t3 \in 2. ((p\ V0t1) \wedge ((p\ V1t2) \wedge (p\ V2t3))) \Leftrightarrow (((p\ V0t1) \wedge (p\ V1t2)) \wedge (p\ V2t3)))))) \quad (18)$$

Assume the following.

$$(\forall V0t \in 2. ((p\ V0t) \Rightarrow False) \Rightarrow (\neg (p\ V0t))) \quad (19)$$

Assume the following.

$$(\forall V0t \in 2.((\neg(p V0t)) \Rightarrow ((p V0t) \Rightarrow False))) \quad (20)$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2.(((True \Rightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Rightarrow True) \Leftrightarrow \\ & True) \wedge (((False \Rightarrow (p V0t)) \Leftrightarrow True) \wedge (((p V0t) \Rightarrow (p V0t)) \Leftrightarrow True) \wedge ((\\ & (p V0t) \Rightarrow False) \Leftrightarrow (\neg(p V0t)))))) \end{aligned} \quad (21)$$

Assume the following.

$$\begin{aligned} & ((\forall V0t \in 2.((\neg(\neg(p V0t))) \Leftrightarrow (p V0t))) \wedge (((\neg True) \Leftrightarrow False) \wedge \\ & ((\neg False) \Leftrightarrow True))) \end{aligned} \quad (22)$$

Assume the following.

$$\forall A_27a.nonempty \ A_27a \Rightarrow (\forall V0x \in A_27a.((V0x = V0x) \Leftrightarrow True)) \quad (23)$$

Assume the following.

$$\forall A_27a.nonempty \ A_27a \Rightarrow (\forall V0x \in A_27a.(\forall V1y \in A_27a.((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \quad (24)$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2.(((True \Leftrightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Leftrightarrow True) \Leftrightarrow \\ & (p V0t)) \wedge (((False \Leftrightarrow (p V0t)) \Leftrightarrow (\neg(p V0t))) \wedge (((p V0t) \Leftrightarrow False) \Leftrightarrow (\neg(\\ & p V0t)))))) \end{aligned} \quad (25)$$

Assume the following.

$$\forall A_27a.nonempty \ A_27a \Rightarrow (\forall V0P \in (2^{A_27a}).((\neg(\forall V1x \in A_27a.(p (ap V0P V1x)))) \Leftrightarrow (\exists V2x \in A_27a.(\neg(p (ap V0P V2x)))))) \quad (26)$$

Assume the following.

$$\begin{aligned} & \forall A_27a.nonempty \ A_27a \Rightarrow (\forall V0P \in (2^{A_27a}).(\forall V1Q \in \\ & 2.(((\exists V2x \in A_27a.(p (ap V0P V2x))) \vee (p V1Q)) \Leftrightarrow (\exists V3x \in \\ & A_27a.((p (ap V0P V3x)) \vee (p V1Q)))))) \end{aligned} \quad (27)$$

Assume the following.

$$\begin{aligned} & \forall A_27a.nonempty \ A_27a \Rightarrow (\forall V0P \in 2.(\forall V1Q \in (\\ & 2^{A_27a}).(((p V0P) \vee (\exists V2x \in A_27a.(p (ap V1Q V2x)))) \Leftrightarrow (\exists V3x \in \\ & A_27a.((p V0P) \vee (p (ap V1Q V3x)))))) \end{aligned} \quad (28)$$

Assume the following.

$$\begin{aligned} & (\forall V0A \in 2.(\forall V1B \in 2.(\forall V2C \in 2.(((p V0A) \vee (\\ & (p V1B) \vee (p V2C)) \Leftrightarrow (((p V0A) \vee (p V1B)) \vee (p V2C)))))) \end{aligned} \quad (29)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((p V0A) \vee (p V1B)) \Leftrightarrow ((p V1B) \vee (p V0A)))) \quad (30)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((p V0A) \wedge (p V1B))) \Leftrightarrow ((\neg(p V0A)) \vee (\neg(p V1B)))))) \wedge ((\neg((p V0A) \vee (p V1B))) \Leftrightarrow ((\neg(p V0A)) \wedge (\neg(p V1B)))))) \quad (31)$$

Assume the following.

$$\begin{aligned} & \forall A.27a.nonempty \ A.27a \Rightarrow \forall A.27b.nonempty \ A.27b \Rightarrow (\\ & \quad \forall V0P \in ((2^{A.27b})^{A.27a}).(\forall V1x \in A.27a.(\exists V2y \in \\ & A.27b.(p (ap (ap V0P V1x) V2y)))) \Leftrightarrow (\exists V3f \in (A.27b^{A.27a}).(\\ & \quad \forall V4x \in A.27a.(p (ap (ap V0P V4x) (ap V3f V4x)))))) \end{aligned} \quad (32)$$

Assume the following.

$$\forall A.27a.nonempty \ A.27a \Rightarrow (\forall V0x \in A.27a.((ap (c.2Ecombin_2EI A.27a) V0x) = V0x)) \quad (33)$$

Assume the following.

$$(\forall V0x \in ty_2Erealx_2Ereal.((ap (ap (c.2Ereal_topology_2Ewithin ty_2Erealx_2Ereal) (ap c.2Ereal_topology_2Eat V0x)) (c.2Epre_set_2EUNIV ty_2Erealx_2Ereal)) = (ap c.2Ereal_topology_2Eat V0x))) \quad (34)$$

Assume the following.

$$\begin{aligned} & (\forall V0l \in ty_2Erealx_2Ereal.(\forall V1f \in (ty_2Erealx_2Ereal^{ty_2Erealx_2Ereal}). \\ & \quad (\forall V2g \in (ty_2Erealx_2Ereal^{ty_2Erealx_2Ereal}).(\forall V3x \in \\ & \quad \quad ty_2Erealx_2Ereal.(\forall V4s \in (2^{ty_2Erealx_2Ereal}).(\\ & \quad \quad \quad \forall V5d \in ty_2Erealx_2Ereal.(((p (ap (ap c.2Erealx_2Ereal_lt \\ & \quad \quad (ap c.2Ereal_2Ereal_of_num c.2Enum_2E0) V5d)) \wedge ((\forall V6x.27 \in \\ & \quad \quad ty_2Erealx_2Ereal.(((p (ap (ap (c.2Ebool_2EIN ty_2Erealx_2Ereal) \\ & \quad \quad V6x.27) V4s)) \wedge ((p (ap (ap c.2Erealx_2Ereal_lt (ap c.2Ereal_2Ereal_of_num \\ & \quad \quad c.2Enum_2E0) (ap c.2Ereal_topology_2EDist (ap (ap (c.2Epair_2E_2C \\ & \quad \quad ty_2Erealx_2Ereal ty_2Erealx_2Ereal) V6x.27) V3x)))) \wedge (p (\\ & \quad \quad \quad ap (ap c.2Erealx_2Ereal_lt (ap c.2Ereal_topology_2EDist (\\ & \quad \quad \quad ap (ap (c.2Epair_2E_2C ty_2Erealx_2Ereal ty_2Erealx_2Ereal) \\ & \quad \quad \quad V6x.27) V3x))) V5d)))) \Rightarrow ((ap V1f V6x.27) = (ap V2g V6x.27))) \wedge (p \\ & \quad \quad (ap (ap (ap (c.2Ereal_topology_2E_2D_2D_3E ty_2Erealx_2Ereal) \\ & \quad \quad V1f) V0l) (ap (ap (c.2Ereal_topology_2Ewithin ty_2Erealx_2Ereal) \\ & \quad \quad (ap c.2Ereal_topology_2Eat V3x)) V4s)))))) \Rightarrow (p (ap (ap (ap (c.2Ereal_topology_2E_2D_2D_3E \\ & \quad \quad ty_2Erealx_2Ereal) V2g) V0l) (ap (ap (c.2Ereal_topology_2Ewithin \\ & \quad \quad ty_2Erealx_2Ereal) (ap c.2Ereal_topology_2Eat V3x)) V4s))))))))) \end{aligned} \quad (35)$$

Assume the following.

$$(\forall V0t \in 2.((\neg(\neg(p V0t))) \Leftrightarrow (p V0t))) \quad (36)$$

Assume the following.

$$(\forall V0A \in 2.((p V0A) \Rightarrow ((\neg(p V0A)) \Rightarrow \text{False}))) \quad (37)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((\neg(p V0A) \vee (p V1B))) \Rightarrow \text{False}) \Leftrightarrow ((p V0A) \Rightarrow \text{False}) \Rightarrow ((\neg(p V1B)) \Rightarrow \text{False})))))) \quad (38)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg(\neg(p V0A) \vee (p V1B))) \Rightarrow \text{False}) \Leftrightarrow ((p V0A) \Rightarrow ((\neg(p V1B)) \Rightarrow \text{False})))))) \quad (39)$$

Assume the following.

$$(\forall V0A \in 2.(((\neg(p V0A)) \Rightarrow \text{False}) \Rightarrow (((p V0A) \Rightarrow \text{False}) \Rightarrow \text{False}))) \quad (40)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow ((p V1q) \Leftrightarrow (p V2r))) \Leftrightarrow (((p V0p) \vee ((p V1q) \vee (p V2r))) \wedge (((p V0p) \vee ((\neg(p V2r)) \vee (\neg(p V1q)))) \wedge (((p V1q) \vee ((\neg(p V2r)) \vee (\neg(p V0p)))) \wedge ((p V2r) \vee ((\neg(p V1q)) \vee (\neg(p V0p))))))))))))) \quad (41)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow ((p V1q) \wedge (p V2r))) \Leftrightarrow (((p V0p) \vee ((\neg(p V1q)) \vee (\neg(p V2r)))) \wedge (((p V1q) \vee (\neg(p V0p))) \wedge ((p V2r) \vee (\neg(p V0p)))))))))) \quad (42)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow ((p V1q) \vee (p V2r))) \Leftrightarrow (((p V0p) \vee (\neg(p V1q))) \wedge (((p V0p) \vee (\neg(p V2r))) \wedge ((p V1q) \vee ((p V2r) \vee (\neg(p V0p)))))))))) \quad (43)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow ((p V1q) \Rightarrow (p V2r))) \Leftrightarrow (((p V0p) \vee (p V1q)) \wedge (((p V0p) \vee (\neg(p V2r))) \wedge ((\neg(p V1q)) \vee ((p V2r) \vee (\neg(p V0p)))))))))) \quad (44)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(((p V0p) \Leftrightarrow (\neg(p V1q))) \Leftrightarrow (((p V0p) \vee (p V1q)) \wedge ((\neg(p V1q)) \vee (\neg(p V0p)))))) \quad (45)$$

Theorem 1

$$\begin{aligned} & (\forall V0l \in ty_2Erealax_2Ereal. (\forall V1f \in (ty_2Erealax_2Ereal^{ty_2Erealax_2Ereal}). \\ & \quad (\forall V2g \in (ty_2Erealax_2Ereal^{ty_2Erealax_2Ereal}). (\forall V3x \in \\ & \quad \quad ty_2Erealax_2Ereal. (\forall V4d \in ty_2Erealax_2Ereal. (((p (\\ & \quad \quad \quad ap (ap c_2Erealax_2Ereal_lt (ap c_2Ereal_2Ereal_of_num c_2Enum_2E0)) \\ & \quad \quad \quad V4d)) \wedge ((\forall V5x_27 \in ty_2Erealax_2Ereal. (((p (ap (ap c_2Erealax_2Ereal_lt \\ & \quad \quad \quad (ap c_2Ereal_2Ereal_of_num c_2Enum_2E0)) (ap c_2Ereal_topology_2EDist \\ & \quad \quad \quad (ap (ap (c_2Epair_2E_2C ty_2Erealax_2Ereal ty_2Erealax_2Ereal) \\ & \quad \quad \quad V5x_27) V3x)))) \wedge (p (ap (ap c_2Erealax_2Ereal_lt (ap c_2Ereal_topology_2EDist \\ & \quad \quad \quad (ap (ap (c_2Epair_2E_2C ty_2Erealax_2Ereal ty_2Erealax_2Ereal) \\ & \quad \quad \quad V5x_27) V3x))) V4d))) \Rightarrow ((ap V1f V5x_27) = (ap V2g V5x_27)))) \wedge (p (\\ & \quad \quad \quad ap (ap (ap (c_2Ereal_topology_2E_2D_2D_3E ty_2Erealax_2Ereal) \\ & \quad \quad \quad V1f) V0l) (ap c_2Ereal_topology_2Eat V3x)))))) \Rightarrow (p (ap (ap (ap (\\ & \quad \quad \quad c_2Ereal_topology_2E_2D_2D_3E ty_2Erealax_2Ereal) V2g) V0l) \\ & \quad \quad \quad (ap c_2Ereal_topology_2Eat V3x))))))))) \end{aligned}$$