

thm_2Ereal__topology_2ECLOSED__IN__COMPACT
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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 $c_2Ebool_2E_2T$ to be $(ap (ap (c_2Emin_2E_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

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

Definition 4 We define $c_2Ebool_2E_3F$ to be $\lambda A_27a : \iota. (\lambda V0P \in (2^{A_27a}). (ap V0P (ap (c_2Emin_2E_40 A_27a P))))$

Let $ty_2Erealx_2Ereal : \iota$ be given. Assume the following.

$$nonempty\ ty_2Erealx_2Ereal \tag{1}$$

Definition 5 We define $c_2Ebool_2E_2IN$ to be $\lambda A_27a : \iota. (\lambda V0x \in A_27a. (\lambda V1f \in (2^{A_27a}). (ap V1f V0x)))$

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 $c_2Ebool_2E_21$ to be $\lambda A_27a : \iota. (\lambda V0P \in (2^{A_27a}). (ap (ap (c_2Emin_2E_3D (2^{A_27a}) P) P)))$

Definition 8 We define $c_2Ebool_2E_2F_5C$ to be $(\lambda V0t1 \in 2. (\lambda V1t2 \in 2. (ap (c_2Ebool_2E_21 2) (\lambda V2t \in 2. (ap V2t t1 t2))))$

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

$$\forall A0. nonempty\ A0 \Rightarrow \forall A1. nonempty\ A1 \Rightarrow nonempty\ (ty_2Epair_2Eprod\ A0\ A1) \tag{2}$$

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

$$\forall A_27a. nonempty\ A_27a \Rightarrow \forall A_27b. nonempty\ A_27b \Rightarrow c_2Epair_2EABS_prod\ A_27a\ A_27b \in ((ty_2Epair_2Eprod\ A_27a\ A_27b)^{(2^{A_27b})^{A_27a}}) \tag{3}$$

Definition 9 We define $c_2Epair_2E_2C$ to be $\lambda A_27a : \iota. \lambda A_27b : \iota. \lambda V0x \in A_27a. \lambda V1y \in A_27b. (ap (c_2Ereal_2Ereal_2EDist : \iota$ be given. Assume the following.

$$c_2Ereal_2Ereal_2EDist \in (ty_2Erealax_2Ereal^{(ty_2Epair_2Eprod\ ty_2Erealax_2Ereal\ ty_2Erealax_2Ereal)}) \quad (4)$$

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

$$nonempty\ ty_2Ehreal_2Ehreal \quad (5)$$

Let $c_2Erealax_2Ereal_2REP_2CLASS : \iota$ be given. Assume the following.

$$c_2Erealax_2Ereal_2REP_2CLASS \in ((2^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)})^{ty_2Erealax}) \quad (6)$$

Definition 10 We define $c_2Erealax_2Ereal_2REP$ to be $\lambda V0a \in ty_2Erealax_2Ereal. (ap (c_2Emin_2E40 ($

Let $c_2Erealax_2Ereal_2lt : \iota$ be given. Assume the following.

$$c_2Erealax_2Ereal_2lt \in ((2^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod\ ty_2Ehreal)}) \quad (7)$$

Definition 11 We define $c_2Erealax_2Ereal_2lt$ to be $\lambda V0T1 \in ty_2Erealax_2Ereal. \lambda V1T2 \in ty_2Erealax_2Ereal.$

Let $c_2Enum_2EZERO_2REP : \iota$ be given. Assume the following.

$$c_2Enum_2EZERO_2REP \in \omega \quad (8)$$

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

$$nonempty\ ty_2Enum_2Enum \quad (9)$$

Let $c_2Enum_2EABS_2num : \iota$ be given. Assume the following.

$$c_2Enum_2EABS_2num \in (ty_2Enum_2Enum^{\omega}) \quad (10)$$

Definition 12 We define c_2Enum_2E0 to be $(ap\ c_2Enum_2EABS_2num\ c_2Enum_2EZERO_2REP).$

Let $c_2Ereal_2Ereal_2of_2num : \iota$ be given. Assume the following.

$$c_2Ereal_2Ereal_2of_2num \in (ty_2Erealax_2Ereal^{ty_2Enum_2Enum}) \quad (11)$$

Definition 13 We define $c_2Ereal_2Ereal_2EOpen$ to be $\lambda V0s \in (2^{ty_2Erealax_2Ereal}). (ap (c_2Ebool_2E2$

Let $ty_2Etopology_2Etopology : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0. nonempty\ A0 \Rightarrow nonempty\ (ty_2Etopology_2Etopology\ A0) \quad (12)$$

Let $c_2Etopology_2Etopology : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a. nonempty\ A_27a \Rightarrow c_2Etopology_2Etopology\ A_27a \in ((ty_2Etopology_2Etopology\ A_27a)^{(2^{(2^{A_27a})})}) \quad (13)$$

Definition 14 We define $c_2Ereal_topology_2Eeuclidean$ to be $(ap (c_2Etopology_2Etopology ty_2Erealax$

Let $c_2Etopology_2Eopen_in : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty A_27a \Rightarrow c_2Etopology_2Eopen_in A_27a \in ((2^{(2^{A_27a})})^{(ty_2Etopology_2Etopology A_27a)}) \quad (14)$$

Let $c_2Epred_set_2EGSPEC : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty A_27a \Rightarrow \forall A_27b.nonempty A_27b \Rightarrow c_2Epred_set_2EGSPEC A_27a A_27b \in ((2^{A_27a})^{(ty_2Epair_2Eprod A_27a 2)^{A_27b}}) \quad (15)$$

Definition 15 We define $c_2Epred_set_2EINTER$ to be $\lambda A_27a : \iota. \lambda V0s \in (2^{A_27a}). \lambda V1t \in (2^{A_27a}). (ap (c_2E$

Definition 16 We define $c_2Ereal_topology_2Esubtopology$ to be $\lambda A_27a : \iota. \lambda V0top \in (ty_2Etopology_2Etopology$

Definition 17 We define $c_2Epred_set_2EBIGUNION$ to be $\lambda A_27a : \iota. \lambda V0P \in (2^{(2^{A_27a})}). (ap (c_2Epred_s$

Definition 18 We define $c_2Etopology_2Etopspace$ to be $\lambda A_27a : \iota. \lambda V0top \in (ty_2Etopology_2Etopology$

Definition 19 We define c_2Ebool_2E2E to be $(ap (c_2Ebool_2E2E 2) (\lambda V0t \in 2.V0t))$.

Definition 20 We define c_2Ebool_2E7E to be $(\lambda V0t \in 2. (ap (ap c_2Emin_2E3D_3D_3E V0t) c_2Ebool_2E$

Definition 21 We define $c_2Epred_set_2EDIFF$ to be $\lambda A_27a : \iota. \lambda V0s \in (2^{A_27a}). \lambda V1t \in (2^{A_27a}). (ap (c_2E$

Definition 22 We define $c_2Epred_set_2ESUBSET$ to be $\lambda A_27a : \iota. \lambda V0s \in (2^{A_27a}). \lambda V1t \in (2^{A_27a}). (ap ($

Definition 23 We define $c_2Etopology_2Eclosed_in$ to be $\lambda A_27a : \iota. \lambda V0top \in (ty_2Etopology_2Etopology$

Definition 24 We define $c_2Epred_set_2EUNIV$ to be $\lambda A_27a : \iota. (\lambda V0x \in A_27a.c_2Ebool_2E2E)$.

Definition 25 We define $c_2Ereal_topology_2Eclosed$ to be $\lambda V0s \in (2^{ty_2Erealax_2Ereal}). (ap c_2Ereal_topo$

Let $c_2Erealax_2Etrealm_neg : \iota$ be given. Assume the following.

$$c_2Erealax_2Etrealm_neg \in ((ty_2Epair_2Eprod ty_2Ehreal_2Ehreal ty_2Ehreal_2Ehreal)^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal ty_2Ehreal_2Ehreal)}) \quad (16)$$

Let $c_2Erealax_2Etrealm_eq : \iota$ be given. Assume the following.

$$c_2Erealax_2Etrealm_eq \in ((2^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal)}) \quad (17)$$

Let $c_2Erealax_2Ereal_ABS_CLASS : \iota$ be given. Assume the following.

$$c_2Erealax_2Ereal_ABS_CLASS \in (ty_2Erealax_2Ereal)^{(2^{(ty_2Epair_2Eprod ty_2Ehreal_2Ehreal ty_2Ehreal_2Ehreal)})} \quad (18)$$

Definition 26 We define $c_2Erealax_2Ereal_ABS$ to be $\lambda V0r \in (ty_2Epair_2Eprod ty_2Ehreal_2Ehreal ty$

Definition 27 We define $c_2Erealax_2Ereal_neg$ to be $\lambda V0T1 \in ty_2Erealax_2Ereal.(ap\ c_2Erealax_2Ereal$

Definition 28 We define $c_2Ereal_2Ereal_lte$ to be $\lambda V0x \in ty_2Erealax_2Ereal.\lambda V1y \in ty_2Erealax_2Ereal$

Definition 29 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 30 We define c_2Ereal_2Eabs to be $\lambda V0x \in ty_2Erealax_2Ereal.(ap\ (ap\ (ap\ (c_2Ebool_2ECOND$

Definition 31 We define $c_2Ereal_topology_2Ebounded_def$ to be $\lambda V0s \in (2^{ty_2Erealax_2Ereal}).(ap\ (c_2Ebo$

Let $c_2Enum_2EREP_num : \iota$ be given. Assume the following.

$$c_2Enum_2EREP_num \in (\omega^{ty_2Enum_2Enum}) \quad (19)$$

Let $c_2Enum_2ESUC_REP : \iota$ be given. Assume the following.

$$c_2Enum_2ESUC_REP \in (\omega^{\omega}) \quad (20)$$

Definition 32 We define c_2Enum_2ESUC to be $\lambda V0m \in ty_2Enum_2Enum.(ap\ c_2Enum_2EABS_num$

Definition 33 We define $c_2Eprim_rec_2E_3C$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Definition 34 We define $c_2Earithmetic_2E_3E$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Definition 35 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 36 We define $c_2Earithmetic_2E_3E_3D$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Let $ty_2Ereal_topology_2Enet : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2Ereal_topology_2Enet\ A0) \quad (21)$$

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

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Ereal_topology_2Emk_net\ A_27a \in ((ty_2Ereal_topology_2Enet\ A_27a)^{(2^{A_27a})^{A_27a}}) \quad (22)$$

Definition 37 We define $c_2Ereal_topology_2Esequentially$ to be $(ap\ (c_2Ereal_topology_2Emk_net\ ty_2Ereal_topology_2Emk_net$

Definition 38 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}).\lambda V2h \in (A_27a^{A_27b}).\lambda V3i \in (A_27a^{A_27c}).\lambda V4j \in (A_27b^{A_27a}).\lambda V5k \in (A_27c^{A_27b}).\lambda V6l \in (A_27c^{A_27a}).\lambda V7m \in (A_27a^{A_27b}).\lambda V8n \in (A_27a^{A_27c}).\lambda V9o \in (A_27b^{A_27c}).\lambda V10p \in (A_27c^{A_27b}).\lambda V11q \in (A_27c^{A_27a}).\lambda V12r \in (A_27a^{A_27b}).\lambda V13s \in (A_27a^{A_27c}).\lambda V14t \in (A_27b^{A_27c}).\lambda V15u \in (A_27c^{A_27b}).\lambda V16v \in (A_27c^{A_27a}).\lambda V17w \in (A_27a^{A_27b}).\lambda V18x \in (A_27a^{A_27c}).\lambda V19y \in (A_27b^{A_27c}).\lambda V20z \in (A_27c^{A_27b}).\lambda V21aa \in (A_27c^{A_27a}).\lambda V22ab \in (A_27a^{A_27b}).\lambda V23ac \in (A_27a^{A_27c}).\lambda V24ba \in (A_27b^{A_27a}).\lambda V25bb \in (A_27b^{A_27b}).\lambda V26bc \in (A_27b^{A_27c}).\lambda V27ca \in (A_27c^{A_27a}).\lambda V28cb \in (A_27c^{A_27b}).\lambda V29cc \in (A_27c^{A_27c}).\lambda V30da \in (A_27a^{A_27d}).\lambda V31db \in (A_27b^{A_27d}).\lambda V32dc \in (A_27c^{A_27d}).\lambda V33da \in (A_27d^{A_27a}).\lambda V34db \in (A_27d^{A_27b}).\lambda V35dc \in (A_27d^{A_27c}).\lambda V36da \in (A_27d^{A_27d}).\lambda V37ea \in (A_27a^{A_27e}).\lambda V38eb \in (A_27b^{A_27e}).\lambda V39ec \in (A_27c^{A_27e}).\lambda V40ea \in (A_27e^{A_27a}).\lambda V41eb \in (A_27e^{A_27b}).\lambda V42ec \in (A_27e^{A_27c}).\lambda V43ea \in (A_27e^{A_27e}).\lambda V44fa \in (A_27a^{A_27f}).\lambda V45fb \in (A_27b^{A_27f}).\lambda V46fc \in (A_27c^{A_27f}).\lambda V47fa \in (A_27f^{A_27a}).\lambda V48fb \in (A_27f^{A_27b}).\lambda V49fc \in (A_27f^{A_27c}).\lambda V50fa \in (A_27f^{A_27f}).\lambda V51ga \in (A_27a^{A_27g}).\lambda V52gb \in (A_27b^{A_27g}).\lambda V53gc \in (A_27c^{A_27g}).\lambda V54ga \in (A_27g^{A_27a}).\lambda V55gb \in (A_27g^{A_27b}).\lambda V56gc \in (A_27g^{A_27c}).\lambda V57ga \in (A_27g^{A_27g}).\lambda V58ha \in (A_27a^{A_27h}).\lambda V59hb \in (A_27b^{A_27h}).\lambda V60hc \in (A_27c^{A_27h}).\lambda V61ha \in (A_27h^{A_27a}).\lambda V62hb \in (A_27h^{A_27b}).\lambda V63hc \in (A_27h^{A_27c}).\lambda V64ha \in (A_27h^{A_27h}).\lambda V65ia \in (A_27a^{A_27i}).\lambda V66ib \in (A_27b^{A_27i}).\lambda V67ic \in (A_27c^{A_27i}).\lambda V68ia \in (A_27i^{A_27a}).\lambda V69ib \in (A_27i^{A_27b}).\lambda V70ic \in (A_27i^{A_27c}).\lambda V71ia \in (A_27i^{A_27i}).\lambda V72ja \in (A_27a^{A_27j}).\lambda V73jb \in (A_27b^{A_27j}).\lambda V74jc \in (A_27c^{A_27j}).\lambda V75ja \in (A_27j^{A_27a}).\lambda V76jb \in (A_27j^{A_27b}).\lambda V77jc \in (A_27j^{A_27c}).\lambda V78ja \in (A_27j^{A_27j}).\lambda V79ka \in (A_27a^{A_27k}).\lambda V80kb \in (A_27b^{A_27k}).\lambda V81kc \in (A_27c^{A_27k}).\lambda V82ka \in (A_27k^{A_27a}).\lambda V83kb \in (A_27k^{A_27b}).\lambda V84kc \in (A_27k^{A_27c}).\lambda V85ka \in (A_27k^{A_27k}).\lambda V86la \in (A_27a^{A_27l}).\lambda V87lb \in (A_27b^{A_27l}).\lambda V88lc \in (A_27c^{A_27l}).\lambda V89la \in (A_27l^{A_27a}).\lambda V90lb \in (A_27l^{A_27b}).\lambda V91lc \in (A_27l^{A_27c}).\lambda V92la \in (A_27l^{A_27l}).\lambda V93ma \in (A_27a^{A_27m}).\lambda V94mb \in (A_27b^{A_27m}).\lambda V95mc \in (A_27c^{A_27m}).\lambda V96ma \in (A_27m^{A_27a}).\lambda V97mb \in (A_27m^{A_27b}).\lambda V98mc \in (A_27m^{A_27c}).\lambda V99ma \in (A_27m^{A_27m}).\lambda V100na \in (A_27a^{A_27n}).\lambda V101nb \in (A_27b^{A_27n}).\lambda V102nc \in (A_27c^{A_27n}).\lambda V103na \in (A_27n^{A_27a}).\lambda V104nb \in (A_27n^{A_27b}).\lambda V105nc \in (A_27n^{A_27c}).\lambda V106na \in (A_27n^{A_27n}).\lambda V107oa \in (A_27a^{A_27o}).\lambda V108ob \in (A_27b^{A_27o}).\lambda V109oc \in (A_27c^{A_27o}).\lambda V110oa \in (A_27o^{A_27a}).\lambda V111ob \in (A_27o^{A_27b}).\lambda V112oc \in (A_27o^{A_27c}).\lambda V113oa \in (A_27o^{A_27o}).\lambda V114pa \in (A_27a^{A_27p}).\lambda V115pb \in (A_27b^{A_27p}).\lambda V116pc \in (A_27c^{A_27p}).\lambda V117pa \in (A_27p^{A_27a}).\lambda V118pb \in (A_27p^{A_27b}).\lambda V119pc \in (A_27p^{A_27c}).\lambda V120pa \in (A_27p^{A_27p}).\lambda V121qa \in (A_27a^{A_27q}).\lambda V122qb \in (A_27b^{A_27q}).\lambda V123qc \in (A_27c^{A_27q}).\lambda V124qa \in (A_27q^{A_27a}).\lambda V125qb \in (A_27q^{A_27b}).\lambda V126qc \in (A_27q^{A_27c}).\lambda V127qa \in (A_27q^{A_27q}).\lambda V128ra \in (A_27a^{A_27r}).\lambda V129rb \in (A_27b^{A_27r}).\lambda V130rc \in (A_27c^{A_27r}).\lambda V131ra \in (A_27r^{A_27a}).\lambda V132rb \in (A_27r^{A_27b}).\lambda V133rc \in (A_27r^{A_27c}).\lambda V134ra \in (A_27r^{A_27r}).\lambda V135sa \in (A_27a^{A_27s}).\lambda V136sb \in (A_27b^{A_27s}).\lambda V137sc \in (A_27c^{A_27s}).\lambda V138sa \in (A_27s^{A_27a}).\lambda V139sb \in (A_27s^{A_27b}).\lambda V140sc \in (A_27s^{A_27c}).\lambda V141sa \in (A_27s^{A_27s}).\lambda V142ta \in (A_27a^{A_27t}).\lambda V143tb \in (A_27b^{A_27t}).\lambda V144tc \in (A_27c^{A_27t}).\lambda V145ta \in (A_27t^{A_27a}).\lambda V146tb \in (A_27t^{A_27b}).\lambda V147tc \in (A_27t^{A_27c}).\lambda V148ta \in (A_27t^{A_27t}).\lambda V149ua \in (A_27a^{A_27u}).\lambda V150ub \in (A_27b^{A_27u}).\lambda V151uc \in (A_27c^{A_27u}).\lambda V152ua \in (A_27u^{A_27a}).\lambda V153ub \in (A_27u^{A_27b}).\lambda V154uc \in (A_27u^{A_27c}).\lambda V155ua \in (A_27u^{A_27u}).\lambda V156va \in (A_27a^{A_27v}).\lambda V157vb \in (A_27b^{A_27v}).\lambda V158vc \in (A_27c^{A_27v}).\lambda V159va \in (A_27v^{A_27a}).\lambda V160vb \in (A_27v^{A_27b}).\lambda V161vc \in (A_27v^{A_27c}).\lambda V162va \in (A_27v^{A_27v}).\lambda V163wa \in (A_27a^{A_27w}).\lambda V164wb \in (A_27b^{A_27w}).\lambda V165wc \in (A_27c^{A_27w}).\lambda V166wa \in (A_27w^{A_27a}).\lambda V167wb \in (A_27w^{A_27b}).\lambda V168wc \in (A_27w^{A_27c}).\lambda V169wa \in (A_27w^{A_27w}).\lambda V170xa \in (A_27a^{A_27x}).\lambda V171xb \in (A_27b^{A_27x}).\lambda V172xc \in (A_27c^{A_27x}).\lambda V173xa \in (A_27x^{A_27a}).\lambda V174xb \in (A_27x^{A_27b}).\lambda V175xc \in (A_27x^{A_27c}).\lambda V176xa \in (A_27x^{A_27x}).\lambda V177ya \in (A_27a^{A_27y}).\lambda V178yb \in (A_27b^{A_27y}).\lambda V179yc \in (A_27c^{A_27y}).\lambda V180ya \in (A_27y^{A_27a}).\lambda V181yb \in (A_27y^{A_27b}).\lambda V182yc \in (A_27y^{A_27c}).\lambda V183ya \in (A_27y^{A_27y}).\lambda V184za \in (A_27a^{A_27z}).\lambda V185zb \in (A_27b^{A_27z}).\lambda V186zc \in (A_27c^{A_27z}).\lambda V187za \in (A_27z^{A_27a}).\lambda V188zb \in (A_27z^{A_27b}).\lambda V189zc \in (A_27z^{A_27c}).\lambda V190za \in (A_27z^{A_27z}).\lambda V191aa \in (A_27a^{A_27a}).\lambda V192ab \in (A_27a^{A_27b}).\lambda V193ac \in (A_27a^{A_27c}).\lambda V194ba \in (A_27b^{A_27a}).\lambda V195bb \in (A_27b^{A_27b}).\lambda V196bc \in (A_27b^{A_27c}).\lambda V197ca \in (A_27c^{A_27a}).\lambda V198cb \in (A_27c^{A_27b}).\lambda V199cc \in (A_27c^{A_27c}).\lambda V200da \in (A_27a^{A_27d}).\lambda V201db \in (A_27b^{A_27d}).\lambda V202dc \in (A_27c^{A_27d}).\lambda V203da \in (A_27d^{A_27a}).\lambda V204db \in (A_27d^{A_27b}).\lambda V205dc \in (A_27d^{A_27c}).\lambda V206da \in (A_27d^{A_27d}).\lambda V207ea \in (A_27a^{A_27e}).\lambda V208eb \in (A_27b^{A_27e}).\lambda V209ec \in (A_27c^{A_27e}).\lambda V210ea \in (A_27e^{A_27a}).\lambda V211eb \in (A_27e^{A_27b}).\lambda V212ec \in (A_27e^{A_27c}).\lambda V213ea \in (A_27e^{A_27e}).\lambda V214fa \in (A_27a^{A_27f}).\lambda V215fb \in (A_27b^{A_27f}).\lambda V216fc \in (A_27c^{A_27f}).\lambda V217fa \in (A_27f^{A_27a}).\lambda V218fb \in (A_27f^{A_27b}).\lambda V219fc \in (A_27f^{A_27c}).\lambda V220fa \in (A_27f^{A_27f}).\lambda V221ga \in (A_27a^{A_27g}).\lambda V222gb \in (A_27b^{A_27g}).\lambda V223gc \in (A_27c^{A_27g}).\lambda V224ga \in (A_27g^{A_27a}).\lambda V225gb \in (A_27g^{A_27b}).\lambda V226gc \in (A_27g^{A_27c}).\lambda V227ga \in (A_27g^{A_27g}).\lambda V228ha \in (A_27a^{A_27h}).\lambda V229hb \in (A_27b^{A_27h}).\lambda V230hc \in (A_27c^{A_27h}).\lambda V231ha \in (A_27h^{A_27a}).\lambda V232hb \in (A_27h^{A_27b}).\lambda V233hc \in (A_27h^{A_27c}).\lambda V234ha \in (A_27h^{A_27h}).\lambda V235ia \in (A_27a^{A_27i}).\lambda V236ib \in (A_27b^{A_27i}).\lambda V237ic \in (A_27c^{A_27i}).\lambda V238ia \in (A_27i^{A_27a}).\lambda V239ib \in (A_27i^{A_27b}).\lambda V240ic \in (A_27i^{A_27c}).\lambda V241ia \in (A_27i^{A_27i}).\lambda V242ja \in (A_27a^{A_27j}).\lambda V243jb \in (A_27b^{A_27j}).\lambda V244jc \in (A_27c^{A_27j}).\lambda V245ja \in (A_27j^{A_27a}).\lambda V246jb \in (A_27j^{A_27b}).\lambda V247jc \in (A_27j^{A_27c}).\lambda V248ja \in (A_27j^{A_27j}).\lambda V249ka \in (A_27a^{A_27k}).\lambda V250kb \in (A_27b^{A_27k}).\lambda V251kc \in (A_27c^{A_27k}).\lambda V252ka \in (A_27k^{A_27a}).\lambda V253kb \in (A_27k^{A_27b}).\lambda V254kc \in (A_27k^{A_27c}).\lambda V255ka \in (A_27k^{A_27k}).\lambda V256la \in (A_27a^{A_27l}).\lambda V257lb \in (A_27b^{A_27l}).\lambda V258lc \in (A_27c^{A_27l}).\lambda V259la \in (A_27l^{A_27a}).\lambda V260lb \in (A_27l^{A_27b}).\lambda V261lc \in (A_27l^{A_27c}).\lambda V262la \in (A_27l^{A_27l}).\lambda V263ma \in (A_27a^{A_27m}).\lambda V264mb \in (A_27b^{A_27m}).\lambda V265mc \in (A_27c^{A_27m}).\lambda V266ma \in (A_27m^{A_27a}).\lambda V267mb \in (A_27m^{A_27b}).\lambda V268mc \in (A_27m^{A_27c}).\lambda V269ma \in (A_27m^{A_27m}).\lambda V270na \in (A_27a^{A_27n}).\lambda V271nb \in (A_27b^{A_27n}).\lambda V272nc \in (A_27c^{A_27n}).\lambda V273na \in (A_27n^{A_27a}).\lambda V274nb \in (A_27n^{A_27b}).\lambda V275nc \in (A_27n^{A_27c}).\lambda V276na \in (A_27n^{A_27n}).\lambda V277oa \in (A_27a^{A_27o}).\lambda V278ob \in (A_27b^{A_27o}).\lambda V279oc \in (A_27c^{A_27o}).\lambda V280oa \in (A_27o^{A_27a}).\lambda V281ob \in (A_27o^{A_27b}).\lambda V282oc \in (A_27o^{A_27c}).\lambda V283oa \in (A_27o^{A_27o}).\lambda V284pa \in (A_27a^{A_27p}).\lambda V285pb \in (A_27b^{A_27p}).\lambda V286pc \in (A_27c^{A_27p}).\lambda V287pa \in (A_27p^{A_27a}).\lambda V288pb \in (A_27p^{A_27b}).\lambda V289pc \in (A_27p^{A_27c}).\lambda V290pa \in (A_27p^{A_27p}).\lambda V291qa \in (A_27a^{A_27q}).\lambda V292qb \in (A_27b^{A_27q}).\lambda V293qc \in (A_27c^{A_27q}).\lambda V294qa \in (A_27q^{A_27a}).\lambda V295qb \in (A_27q^{A_27b}).\lambda V296qc \in (A_27q^{A_27c}).\lambda V297qa \in (A_27q^{A_27q}).\lambda V298ra \in (A_27a^{A_27r}).\lambda V299rb \in (A_27b^{A_27r}).\lambda V300rc \in (A_27c^{A_27r}).\lambda V301ra \in (A_27r^{A_27a}).\lambda V302rb \in (A_27r^{A_27b}).\lambda V303rc \in (A_27r^{A_27c}).\lambda V304ra \in (A_27r^{A_27r}).\lambda V305sa \in (A_27a^{A_27s}).\lambda V306sb \in (A_27b^{A_27s}).\lambda V307sc \in (A_27c^{A_27s}).\lambda V308sa \in (A_27s^{A_27a}).\lambda V309sb \in (A_27s^{A_27b}).\lambda V310sc \in (A_27s^{A_27c}).\lambda V311sa \in (A_27s^{A_27s}).\lambda V312ta \in (A_27a^{A_27t}).\lambda V313tb \in (A_27b^{A_27t}).\lambda V314tc \in (A_27c^{A_27t}).\lambda V315ta \in (A_27t^{A_27a}).\lambda V316tb \in (A_27t^{A_27b}).\lambda V317tc \in (A_27t^{A_27c}).\lambda V318ta \in (A_27t^{A_27t}).\lambda V319ua \in (A_27a^{A_27u}).\lambda V320ub \in (A_27b^{A_27u}).\lambda V321uc \in (A_27c^{A_27u}).\lambda V322ua \in (A_27u^{A_27a}).\lambda V323ub \in (A_27u^{A_27b}).\lambda V324uc \in (A_27u^{A_27c}).\lambda V325ua \in (A_27u^{A_27u}).\lambda V326va \in (A_27a^{A_27v}).\lambda V327vb \in (A_27b^{A_27v}).\lambda V328vc \in (A_27c^{A_27v}).\lambda V329va \in (A_27v^{A_27a}).\lambda V330vb \in (A_27v^{A_27b}).\lambda V331vc \in (A_27v^{A_27c}).\lambda V332va \in (A_27v^{A_27v}).\lambda V333wa \in (A_27a^{A_27w}).\lambda V334wb \in (A_27b^{A_27w}).\lambda V335wc \in (A_27c^{A_27w}).\lambda V336wa \in (A_27w^{A_27a}).\lambda V337wb \in (A_27w^{A_27b}).\lambda V338wc \in (A_27w^{A_27c}).\lambda V339wa \in (A_27w^{A_27w}).\lambda V340xa \in (A_27a^{A_27x}).\lambda V341xb \in (A_27b^{A_27x}).\lambda V342xc \in (A_27c^{A_27x}).\lambda V343xa \in (A_27x^{A_27a}).\lambda V344xb \in (A_27x^{A_27b}).\lambda V345xc \in (A_27x^{A_27c}).\lambda V346xa \in (A_27x^{A_27x}).\lambda V347ya \in (A_27a^{A_27y}).\lambda V348yb \in (A_27b^{A_27y}).\lambda V349yc \in (A_27c^{A_27y}).\lambda V350ya \in (A_27y^{A_27a}).\lambda V351yb \in (A_27y^{A_27b}).\lambda V352yc \in (A_27y^{A_27c}).\lambda V353ya \in (A_27y^{A_27y}).\lambda V354za \in (A_27a^{A_27z}).\lambda V355zb \in (A_27b^{A_27z}).\lambda V356zc \in (A_27c^{A_27z}).\lambda V357za \in (A_27z^{A_27a}).\lambda V358zb \in (A_27z^{A_27b}).\lambda V359zc \in (A_27z^{A_27c}).\lambda V360za \in (A_27z^{A_27z}).\lambda V361aa \in (A_27a^{A_27a}).\lambda V362ab \in (A_27a^{A_27b}).\lambda V363ac \in (A_27a^{A_27c}).\lambda V364ba \in (A_27b^{A_27a}).\lambda V365bb \in (A_27b^{A_27b}).\lambda V366bc \in (A_27b^{A_27c}).\lambda V367ca \in (A_27c^{A_27a}).\lambda V368cb \in (A_27c^{A_27b}).\lambda V369cc \in (A_27c^{A_27c}).\lambda V370da \in (A_27a^{A_27d}).\lambda V371db \in (A_27b^{A_27d}).\lambda V372dc \in (A_27c^{A_27d}).\lambda V373da \in (A_27d^{A_27a}).\lambda V374db \in (A_27d^{A_27b}).\lambda V375dc \in (A_27d^{A_27c}).\lambda V376da \in (A_27d^{A_27d}).\lambda V377ea \in (A_27a^{A_27e}).\lambda V378eb \in (A_27b^{A_27e}).\lambda V379ec \in (A_27c^{A_27e}).\lambda V380ea \in (A_27e^{A_27a}).\lambda V381eb \in (A_27e^{A_27b}).\lambda V382ec \in (A_27e^{A_27c}).\lambda V383ea \in (A_27e^{A_27e}).\lambda V384fa \in (A_27a^{A_27f}).\lambda V385fb \in (A_27b^{A_27f}).\lambda V386fc \in (A_27c^{A_27f}).\lambda V387fa \in (A_27f^{A_27a}).\lambda V388fb \in (A_27f^{A_27b}).\lambda V389fc \in (A_27f^{A_27c}).\lambda V390fa \in (A_27f^{A_27f}).\lambda V391ga \in (A_27a^{A_27g}).\lambda V392gb \in (A_27b^{A_27g}).\lambda V393gc \in (A_27c^{A_27g}).\lambda V394ga \in (A_27g^{A_27a}).\lambda V395gb \in (A_27g^{A_27b}).\lambda V396gc \in (A_27g^{A_27c}).\lambda V397ga \in (A_27g^{A_27g}).\lambda V398ha \in (A_27a^{A_27h}).\lambda V399hb \in (A_27b^{A_27h}).\lambda V400hc \in (A_27c^{A_27h}).\lambda V401ha \in (A_27h^{A_27a}).\lambda V402hb \in (A_27h^{A_27b}).\lambda V403hc \in (A_27h^{A_27c}).\lambda V404ha \in (A_27h^{A_27h}).\lambda V405ia \in (A_27a^{A_27i}).\lambda V406ib \in (A_27b^{A_27i}).\lambda V407ic \in (A_27c^{A_27i}).\lambda V408ia \in (A_27i^{A_27a}).\lambda V409ib \in (A_27i^{A_27b}).\lambda V410ic \in (A_27i^{A_27c}).\lambda V411ia \in (A_27i^{A_27i}).\lambda V412ja \in (A_27a^{A_27j}).\lambda V413jb \in (A_27b^{A_27j}).\lambda V414jc \in (A_27c^{A_27j}).\lambda V415ja \in (A_27j^{A_27a}).\lambda V416jb \in (A_27j^{A_27b}).\lambda V417jc \in (A_27j^{A_27c}).\lambda V418ja \in (A_27j^{A_27j}).\lambda V419ka \in (A_27a^{A_27k}).\lambda V420kb \in (A_27b^{A_27k}).\lambda V421kc \in (A_27c^{A_27k}).\lambda V422ka \in (A_27k^{A_27a}).\lambda V423kb \in (A_27k^{A_27b}).\lambda V424kc \in (A_27k^{A_27c}).\lambda V425ka \in (A_27k^{A_27k}).\lambda V426la \in (A_27a^{A_27l}).\lambda V427lb \in (A_27b^{A_27l}).\lambda V428lc \in (A_27c^{A_27l}).\lambda V429la \in (A_27l^{A_27a}).\lambda V430lb \in (A_27l^{A_27b}).\lambda V431lc \in (A_27l^{A_27c}).\lambda V432la \in (A_27l^{A_27l}).\lambda V433ma \in (A_27a^{A_27m}).\lambda V434mb \in (A_27b^{A_27m}).\lambda V435mc \in (A_27c^{A_27m}).\lambda V436ma \in (A_27m^{A_27a}).\lambda V437mb \in (A_27m^{A_27b}).\lambda V438mc \in (A_27m^{A_27c}).\lambda V439ma \in (A_27m^{A_27m}).\lambda V440na \in (A_27a^{A_27n}).\lambda V441nb \in (A_27b^{A_27n}).\lambda V442nc \in (A_27c^{A_27n}).\lambda V443na \in (A_27n^{A_27a}).\lambda V444nb \in (A_27n^{A_27b}).\lambda V445nc \in (A_27n^{A_27c}).\lambda V446na \in (A_27n^{A_27n}).\lambda V447oa \in (A_27a^{A_27o}).\lambda V448ob \in (A_27b^{A_27o}).\lambda V449oc \in (A_27c^{A_27o}).\lambda V450oa \in (A_27o^{A_27a}).\lambda V451ob \in (A_27o^{A_27b}).\lambda V452oc \in (A_27o^{A_27c}).\lambda V453oa \in (A_27o^{A_27o}).\lambda V454pa \in (A_27a^{A_27p}).\lambda V455pb \in (A_27b^{A_27p}).\lambda V456pc \in (A_27c^{A_27p}).\lambda V457pa \in (A_27p^{A_27a}).\lambda V458pb \in (A_27p^{A_27b}).\lambda V459pc \in (A_27p^{A_27c}).\lambda V460pa \in (A_27p^{A_27p}).\lambda V461qa \in (A_27a^{A_27q}).\lambda V462qb \in (A_27b^{A_27q}).\lambda V463qc \in (A_27c^{A_27q}).\lambda V464qa \in (A_27q^{A_27a}).\lambda V465qb \in (A_27q^{A_27b}).\lambda V466qc \in (A_27q^{A_27c}).\lambda V467qa \in (A_27q^{A_27q}).\lambda V468ra \in (A_27a^{A_27r}).\lambda V469rb \in (A_27b^{A_27r}).\lambda V470rc \in (A_27c^{A_27r}).\lambda V471ra \in (A_27r^{A_27a}).\lambda V472rb \in (A_27r^{A_27b}).\lambda V473rc \in (A_27r^{A_27c}).\lambda V474ra \in (A_27r^{A_27r}).\lambda V475sa \in (A_27a^{A_27s}).\lambda V476sb \in (A_27b^{A_27s}).\lambda V477sc \in (A_27c^{A_27s}).\lambda V478sa \in (A_27s^{A_27a}).\lambda V479sb \in (A_27s^{A_27b}).\lambda V480sc \in (A_27s^{A_27c}).\lambda V481sa \in (A_27s^{A_27s}).\lambda V482ta \in (A_27a^{A_27t}).\lambda V483tb \in$

Definition 42 We define $c_2Ereal_topology_2Ecompact$ to be $\lambda V0s \in (2^{ty_2Erealax_2Ereal}).(ap (c_2Ebool_2Ecompact$

Assume the following.

$$True \quad (24)$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(((p V0t1) \Rightarrow (p V1t2)) \Rightarrow (((p V1t2) \Rightarrow (p V0t1)) \Rightarrow ((p V0t1) \Leftrightarrow (p V1t2)))))) \quad (25)$$

Assume the following.

$$(\forall V0t \in 2.(((p V0t) \Rightarrow False) \Rightarrow (\neg(p V0t)))) \quad (26)$$

Assume the following.

$$(\forall V0t \in 2.((\neg(p V0t)) \Rightarrow ((p V0t) \Rightarrow False))) \quad (27)$$

Assume the following.

$$(\forall V0t \in 2.(((True \wedge (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \wedge True) \Leftrightarrow (p V0t)) \wedge (((False \wedge (p V0t)) \Leftrightarrow False) \wedge (((p V0t) \wedge False) \Leftrightarrow False) \wedge (((p V0t) \wedge (p V0t)) \Leftrightarrow (p V0t)))))) \quad (28)$$

Assume the following.

$$(\forall V0t \in 2.(((True \Rightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Rightarrow True) \Leftrightarrow True) \wedge (((False \Rightarrow (p V0t)) \Leftrightarrow True) \wedge (((p V0t) \Rightarrow (p V0t)) \Leftrightarrow True) \wedge (((p V0t) \Rightarrow False) \Leftrightarrow (\neg(p V0t)))))) \quad (29)$$

Assume the following.

$$((\forall V0t \in 2.((\neg(\neg(p V0t))) \Leftrightarrow (p V0t)) \wedge ((\neg True) \Leftrightarrow False) \wedge ((\neg False) \Leftrightarrow True))) \quad (30)$$

Assume the following.

$$\forall A_27a.nonempty A_27a \Rightarrow (\forall V0x \in A_27a.(\forall V1y \in A_27a.((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \quad (31)$$

Assume the following.

$$(\forall V0t \in 2.(((True \Leftrightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Leftrightarrow True) \Leftrightarrow (p V0t)) \wedge (((False \Leftrightarrow (p V0t)) \Leftrightarrow (\neg(p V0t))) \wedge (((p V0t) \Leftrightarrow False) \Leftrightarrow (\neg(p V0t)))))) \quad (32)$$

Assume the following.

$$\forall A_27a.nonempty A_27a \Rightarrow (\forall V0P \in (2^{A_27a}).((\neg(\forall V1x \in A_27a.(p (ap V0P V1x)))) \Leftrightarrow (\exists V2x \in A_27a.(\neg(p (ap V0P V2x)))))) \quad (33)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(\forall V2C \in 2.(((p V0A) \vee (p V1B) \vee (p V2C))) \Leftrightarrow (((p V0A) \vee (p V1B)) \vee (p V2C)))))) \quad (34)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((p V0A) \vee (p V1B)) \Leftrightarrow ((p V1B) \vee (p V0A)))))) \quad (35)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((p V0A) \wedge (p V1B))) \Leftrightarrow ((\neg(p V0A) \vee \neg(p V1B)))))) \wedge (((\neg((p V0A) \vee (p V1B))) \Leftrightarrow ((\neg(p V0A) \wedge \neg(p V1B))))))))) \quad (36)$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(\forall V2t3 \in 2.(((p V0t1) \Rightarrow (p V1t2) \Rightarrow (p V2t3))) \Leftrightarrow (((p V0t1) \wedge (p V1t2)) \Rightarrow (p V2t3)))))) \quad (37)$$

Assume the following.

$$2.(((p V0x) \Leftrightarrow (p V1x_{.27})) \wedge ((p V1x_{.27}) \Rightarrow ((p V2y) \Leftrightarrow (p V3y_{.27})))) \Rightarrow (((p V0x) \Rightarrow (p V2y)) \Leftrightarrow ((p V1x_{.27}) \Rightarrow (p V3y_{.27})))) \quad (38)$$

Assume the following.

$$(\forall V0r \in 2.(\forall V1p \in 2.(\forall V2q \in 2.(((p V1p) \wedge (p V2q)) \Rightarrow (p V0r)) \Leftrightarrow ((p V1p) \Rightarrow ((p V2q) \Rightarrow (p V0r)))))) \quad (39)$$

Assume the following.

$$(\forall V0s \in (2^{ty_2Erealax_2Ereal}).(\forall V1t \in (2^{ty_2Erealax_2Ereal}).((p (ap c_2Ereal_topology_2EClosed V0s)) \Rightarrow ((p (ap (ap (c_2Ereal_topology_2EClosed_in ty_2Erealax_2Ereal) (ap (ap (c_2Ereal_topology_2Esubtopology ty_2Erealax_2Ereal) c_2Ereal_topology_2Euclidean) V0s)) V1t)) \Leftrightarrow ((p (ap c_2Ereal_topology_2EClosed V1t)) \wedge (p (ap (ap (c_2Epred_set_2ESUBSET ty_2Erealax_2Ereal) V1t) V0s)))))))))) \quad (40)$$

Assume the following.

$$(\forall V0s \in (2^{ty_2Erealax_2Ereal}).(\forall V1t \in (2^{ty_2Erealax_2Ereal}).(((p (ap c_2Ereal_topology_2Ebounded_def V1t)) \wedge (p (ap (ap (c_2Epred_set_2ESUBSET ty_2Erealax_2Ereal) V0s) V1t))) \Rightarrow (p (ap c_2Ereal_topology_2Ebounded_def V0s)))))) \quad (41)$$

Assume the following.

$$(\forall V0s \in (2^{ty_2Erealax_2Ereal}).((p (ap c_2Ereal_topology_2Ecompact V0s)) \Leftrightarrow ((p (ap c_2Ereal_topology_2Ebounded_def V0s)) \wedge (p (ap c_2Ereal_topology_2EClosed V0s)))))) \quad (42)$$

Assume the following.

$$(\forall V0t \in 2.((\neg(\neg(p V0t))) \Leftrightarrow (p V0t))) \quad (43)$$

Assume the following.

$$(\forall V0A \in 2.((p V0A) \Rightarrow ((\neg(p V0A)) \Rightarrow \text{False}))) \quad (44)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((\neg(p V0A) \vee (p V1B))) \Rightarrow \text{False}) \Leftrightarrow ((p V0A) \Rightarrow \text{False}) \Rightarrow ((\neg(p V1B)) \Rightarrow \text{False})))))) \quad (45)$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg(\neg(p V0A) \vee (p V1B))) \Rightarrow \text{False}) \Leftrightarrow ((p V0A) \Rightarrow ((\neg(p V1B)) \Rightarrow \text{False})))))) \quad (46)$$

Assume the following.

$$(\forall V0A \in 2.(((\neg(p V0A)) \Rightarrow \text{False}) \Rightarrow (((p V0A) \Rightarrow \text{False}) \Rightarrow \text{False}))) \quad (47)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow (p V1q) \Leftrightarrow (p V2r)) \Leftrightarrow (((p V0p) \vee ((p V1q) \vee (p V2r))) \wedge (((p V0p) \vee ((\neg(p V2r)) \vee (\neg(p V1q)))) \wedge (((p V1q) \vee ((\neg(p V2r)) \vee (\neg(p V0p)))) \wedge ((p V2r) \vee ((\neg(p V1q)) \vee (\neg(p V0p)))))))))) \quad (48)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow (p V1q) \wedge (p V2r)) \Leftrightarrow (((p V0p) \vee ((\neg(p V1q)) \vee (\neg(p V2r)))) \wedge (((p V1q) \vee (\neg(p V0p))) \wedge ((p V2r) \vee (\neg(p V0p)))))))) \quad (49)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow (p V1q) \vee (p V2r)) \Leftrightarrow (((p V0p) \vee (\neg(p V1q))) \wedge (((p V0p) \vee (\neg(p V2r))) \wedge ((p V1q) \vee ((p V2r) \vee (\neg(p V0p)))))))))) \quad (50)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p V0p) \Leftrightarrow (p V1q) \Rightarrow (p V2r)) \Leftrightarrow (((p V0p) \vee (p V1q)) \wedge (((p V0p) \vee (\neg(p V2r))) \wedge ((\neg(p V1q)) \vee ((p V2r) \vee (\neg(p V0p)))))))))) \quad (51)$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(((p V0p) \Leftrightarrow (\neg(p V1q))) \Leftrightarrow (((p V0p) \vee (p V1q)) \wedge ((\neg(p V1q)) \vee (\neg(p V0p)))))) \quad (52)$$

Theorem 1

$$\begin{aligned} & (\forall V_0s \in ({}^{ty}\text{-}{}_{2}\text{Erealax-}{}_{2}\text{Ereal}).(\forall V_1t \in ({}^{ty}\text{-}{}_{2}\text{Erealax-}{}_{2}\text{Ereal}). \\ & (((p (ap \text{c-}{}_{2}\text{Ereal_topology-}{}_{2}\text{Ecompact } V_0s)) \wedge (p (ap (ap (\text{c-}{}_{2}\text{Etopology-}{}_{2}\text{Eclosed_in} \\ & \text{ty-}{}_{2}\text{Erealax-}{}_{2}\text{Ereal}) (ap (ap (\text{c-}{}_{2}\text{Ereal_topology-}{}_{2}\text{Esubtopology} \\ & \text{ty-}{}_{2}\text{Erealax-}{}_{2}\text{Ereal}) \text{c-}{}_{2}\text{Ereal_topology-}{}_{2}\text{Euclidean}) V_0s)) \\ & V_1t))) \Rightarrow (p (ap \text{c-}{}_{2}\text{Ereal_topology-}{}_{2}\text{Ecompact } V_1t)))) \end{aligned}$$