thm_2Elebesgue_2Epos__fn__integral__add (TMXm-NmP8QAh3RZ587Vxa9pFQaKiPEqM9tyB)

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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* $(ap\ (ap\ ($c_2Emin_2E_3D $(2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V$

Definition 4 *We define* c_2Ecombin_2ES *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda A\_27c : \iota.(\lambda V0f \in ((A\_27c^{A\_27b})^{A\_27a}$

Definition 5 *We define* c_2Ecombin_2EC *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda A\_27c : \iota.(\lambda V0f \in ((A\_27c^{A\_27b})^{A\_27a}$

Definition 6 *We define* c_2Ecombin_2EK *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.(\lambda V0x \in A\_27a.(\lambda V1y \in A\_27b.V0x))$

Definition 7 *We define* c_2Ecombin_2EI *to be* $\lambda A_27a : \iota.(ap\ (ap\ ($c_2Ecombin_2ES $A\_27a\ (A\_27a^{A\_27a})\ A$

Definition 8 *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 9 *We define* c_2Ecombin_2Eo *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda A\_27c : \iota.\lambda V0f \in (A\_27b^{A\_27c}).\lambda V1g$

Let $ty\_2Enum\_2Enum : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Enum\_2Enum \quad (1)$$

Definition 10 *We define* c_2Ebool_2EF *to be* $(ap\ ($c_2Ebool_2E_21 $2)\ (\lambda V0t \in 2.V0t))$.

Definition 11 *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 12 *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 13 *We define* c_2Ebool_2E_2F_5C *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ ($c_2Ebool_2E_21 $2)\ (\lambda V2t \in$

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

$$c\_2Enum\_2EREP\_\_num \in (omega^{ty\_2Enum\_2Enum}) \quad (2)$$

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

$$c\_2Enum\_2ESUC\_\_REP \in (omega^{omega}) \quad (3)$$

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

$$c\_2Enum\_2EABS\_\_num \in (ty\_2Enum\_2Enum^{omega}) \quad (4)$$

Definition 14 *We define* c_2Enum_2ESUC *to be* $\lambda V0m \in ty\_2Enum\_2Enum.(ap\ c\_2Enum\_2EABS\_\_num$

Definition 15 *We define* c_2Ebool_2E_3F *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ V0P\ (ap\ (\mathsf{c\_2Emin\_2E\_40}$

Definition 16 *We define* c_2Eprim__rec_2E_3C *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2Enu$

Definition 17 *We define* c_2Ebool_2E_5C_2F *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V2t \in$

Definition 18 *We define* c_2Earithmetic_2E_3C_3D *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2$

Let $ty\_2Eextreal\_2Eextreal : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Eextreal\_2Eextreal \quad (5)$$

Let $c\_2Eextreal\_2Eextreal\_\_add : \iota$ be given. Assume the following.

$$c\_2Eextreal\_2Eextreal\_\_add \in ((ty\_2Eextreal\_2Eextreal^{ty\_2Eextreal\_2Eextreal})^{ty\_2Eextreal\_2Eextreal}) \quad (6)$$

Let $ty\_2Erealax\_2Ereal : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Erealax\_2Ereal \quad (7)$$

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

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty\_2Epair\_2Eprod\ A0\ A1) \quad (8)$$

Let $c\_2Emeasure\_2Emeasure : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Emeasure\_2Emeasure\ A\_27a \in ((ty\_2Erealax\_2Ereal^{(2^{A\_27a})})^{(ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})})} \quad (9)$$

Let $ty\_2Ehreal\_2Ehreal : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Ehreal\_2Ehreal \quad (10)$$

Let $c\_2Erealax\_2Ereal\_\_REP\_\_CLASS : \iota$ be given. Assume the following.

$$c\_2Erealax\_2Ereal\_\_REP\_\_CLASS \in ((2^{(ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehreal)})^{ty\_2Erealax} \quad (11)$$

Definition 19 *We define* c_2Erealax_2Ereal__REP *to be* $\lambda V0a \in ty\_2Erealax\_2Ereal.(ap$ (c_2Emin_2E_40 $(t$

Let $c\_2Erealax\_2Etreal\_\_mul : \iota$ be given. Assume the following.

$$c\_2Erealax\_2Etreal\_\_mul \in (((ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehreal)^{(ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehreal)})^{(ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehr} \tag{12}$$

Let $c\_2Erealax\_2Etreal\_\_eq : \iota$ be given. Assume the following.

$$c\_2Erealax\_2Etreal\_\_eq \in ((2^{(ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehreal)})^{(ty\_2Epair\_2Eprod\ ty\_2Eh} \tag{13}$$

Let $c\_2Erealax\_2Ereal\_\_ABS\_\_CLASS : \iota$ be given. Assume the following.

$$c\_2Erealax\_2Ereal\_\_ABS\_\_CLASS \in (ty\_2Erealax\_2Ereal^{(2^{(ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehr} \tag{14}$$

Definition 20 *We define* c_2Erealax_2Ereal__ABS *to be* $\lambda V0r \in (ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty$

Definition 21 *We define* c_2Erealax_2Ereal__mul *to be* $\lambda V0T1 \in ty\_2Erealax\_2Ereal.\lambda V1T2 \in ty\_2Ereala$

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

$$c\_2Enum\_2EZERO\_\_REP \in omega \tag{15}$$

Definition 22 *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.

$$c\_2Ereal\_2Ereal\_\_of\_\_num \in (ty\_2Erealax\_2Ereal^{ty\_2Enum\_2Enum}) \tag{16}$$

Let $c\_2Erealax\_2Etreal\_\_add : \iota$ be given. Assume the following.

$$c\_2Erealax\_2Etreal\_\_add \in (((ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehreal)^{(ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehreal)})^{(ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehr} \tag{17}$$

Definition 23 *We define* c_2Erealax_2Ereal__add *to be* $\lambda V0T1 \in ty\_2Erealax\_2Ereal.\lambda V1T2 \in ty\_2Ereala$

Let $c\_2Epred\_\_set\_2EITSET : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epred\_\_set\_2EITSET\ A\_27a\ A\_27b \in (((A\_27b^{A\_27b})^{(2^{A\_27a})})^{((A\_27b^{A\_27b})^{A\_27a})}) \tag{18}$$

Definition 24 *We define* c_2Ereal__sigma_2EREAL__SUM__IMAGE *to be* $\lambda A\_27a : \iota.\lambda V0f \in (ty\_2Erealax\_2$

Let $c\_2Eextreal\_2ENormal : \iota$ be given. Assume the following.

$$c\_2Eextreal\_2ENormal \in (ty\_2Eextreal\_2Eextreal^{ty\_2Erealax\_2Ereal}) \tag{19}$$

Definition 25 *We define* c_2Elebesgue_2Epos__simple__fn__integral *to be* $\lambda A\_27a : \iota.\lambda V0m \in (ty\_2Epair\_2E$

Definition 26 *We define* c_2Eextreal_2Eextreal__of__num *to be* $\lambda V0n \in ty\_2Enum\_2Enum.(ap\ c\_2Eextreal$

Let $c\_2Eextreal\_2Eextreal\_\_ainv : \iota$ be given. Assume the following.

$$c\_2Eextreal\_2Eextreal\_\_ainv \in (ty\_2Eextreal\_2Eextreal^{ty\_2Eextreal\_2Eextreal}) \tag{20}$$

Let $c\_2Eextreal\_2Eextreal\_\_le : \iota$ be given. Assume the following.

$$c\_2Eextreal\_2Eextreal\_\_le \in ((2^{ty\_2Eextreal\_2Eextreal})^{ty\_2Eextreal\_2Eextreal}) \tag{21}$$

Definition 27 *We define* c_2Eextreal_2Eextreal__lt *to be* $\lambda V0x \in ty\_2Eextreal\_2Eextreal.\lambda V1y \in ty\_2Eext$

Definition 28 *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 29 *We define* c_2Emeasure_2Efn__minus *to be* $\lambda A\_27a : \iota.\lambda V0f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}$

Let $c\_2Emeasure\_2Em\_\_space : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Emeasure\_2Em\_\_space\ A\_27a \in ((2^{A\_27a})^{(ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})})))}) \tag{22}$$

Definition 30 *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 $c\_2Epair\_2EABS\_\_prod : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2EABS\_\_prod\ A\_27a\ A\_27b \in ((ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)^{((2^{A\_27b})^{A\_27a})}) \tag{23}$$

Definition 31 *We define* c_2Epair_2E_2C *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0x \in A\_27a.\lambda V1y \in A\_27b.(ap\ (c\_2$

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

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epred\_\_set\_2EGSPEC\ A\_27a\ A\_27b \in ((2^{A\_27a})^{((ty\_2Epair\_2Eprod\ A\_27a\ 2)^{A\_27b})}) \tag{24}$$

Definition 32 *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 33 *We define* c_2Epred__set_2EBIGUNION *to be* $\lambda A\_27a : \iota.\lambda V0P \in (2^{(2^{A\_27a})}).(ap\ (c\_2Epred\_\_s$

Definition 34 *We define* c_2Epred__set_2EEMPTY *to be* $\lambda A_27a : \iota.(\lambda V0x \in A_27a.c_2Ebool_2EF)$.

Definition 35 *We define* c_2Epred__set_2EINTER *to be* $\lambda A\_27a : \iota.\lambda V0s \in (2^{A\_27a}).\lambda V1t \in (2^{A\_27a}).(ap\ (c\_$

Definition 36 *We define* c_2Epred__set_2EDISJOINT *to be* $\lambda A\_27a : \iota.\lambda V0s \in (2^{A\_27a}).\lambda V1t \in (2^{A\_27a}).(ap$

Let $c\_2Erealax\_2Etreal\_\_lt : \iota$ be given. Assume the following.

$$c\_2Erealax\_2Etreal\_\_lt \in ((2^{(ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehreal)})^{(ty\_2Epair\_2Eprod\ ty\_2Ehr} \tag{25}$$

Definition 37 *We define* c_2Erealax_2Ereal__lt *to be* $\lambda V0T1 \in ty\_2Erealax\_2Ereal.\lambda V1T2 \in ty\_2Erealax\_$

Definition 38 *We define* c_2Ereal_2Ereal__lte *to be* $\lambda V0x \in ty\_2Erealax\_2Ereal.\lambda V1y \in ty\_2Erealax\_2Er$

Definition 39 *We define* c_2Epred__set_2EINSERT *to be* $\lambda A\_27a : \iota.\lambda V0x \in A\_27a.\lambda V1s \in (2^{A\_27a}).(ap\ (c\_$

Definition 40 *We define* c_2Epred__set_2EFINITE *to be* $\lambda A\_27a : \iota.\lambda V0s \in (2^{A\_27a}).(ap$ (c_2Ebool_2E_21 (2

Let $c\_2Emeasure\_2Emeasurable\_\_sets : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Emeasure\_2Emeasurable\_\_sets\ A\_27a \in ((2^{(2^{A\_27a})})^{(ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})})))}) \tag{26}$$

Definition 41 *We define* c_2Earithmetic_2EZERO *to be* c_2Enum_2E0*.*

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

$$c\_2Earithmetic\_2E\_2B \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{27}$$

Definition 42 *We define* c_2Earithmetic_2EBIT1 *to be* $\lambda V0n \in ty\_2Enum\_2Enum.(ap\ (ap\ c\_2Earithmetic$

Definition 43 *We define* c_2Earithmetic_2ENUMERAL *to be* $\lambda V0x \in ty\_2Enum\_2Enum.V0x.$

Definition 44 *We define* c_2Emeasure_2Eindicator__fn *to be* $\lambda A\_27a : \iota.\lambda V0s \in (2^{A\_27a}).(\lambda V1x \in A\_27a.(ap$

Let $c\_2Eextreal\_2Eextreal\_\_mul : \iota$ be given. Assume the following.

$$c\_2Eextreal\_2Eextreal\_\_mul \in ((ty\_2Eextreal\_2Eextreal^{ty\_2Eextreal\_2Eextreal})^{ty\_2Eextreal\_2Eextreal}) \tag{28}$$

Definition 45 *We define* c_2Eextreal_2EEXTREAL__SUM__IMAGE *to be* $\lambda A\_27a : \iota.\lambda V0f \in (ty\_2Eextreal\_$

Definition 46 *We define* c_2Emeasure_2Epos__simple__fn *to be* $\lambda A\_27a : \iota.\lambda V0m \in (ty\_2Epair\_2Eprod\ (2^{A}$

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

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2ESND\ A\_27a\ A\_27b \in (A\_27b^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)}) \tag{29}$$

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

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Epair\_2EFST\ A\_27a\ A\_27b \in (A\_27a^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27b)}) \tag{30}$$

Definition 47 *We define* c_2Epair_2EUNCURRY *to be* $\lambda A\_27a:\iota.\lambda A\_27b:\iota.\lambda A\_27c:\iota.\lambda V0f\in((A\_27c^{A\_27$

Definition 48 *We define* c_2Elebesgue_2Epsfs *to be* $\lambda A\_27a:\iota.\lambda V0m\in(ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2$

Definition 49 *We define* c_2Elebesgue_2Epsfis *to be* $\lambda A\_27a:\iota.\lambda V0m\in(ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2$

Definition 50 *We define* c_2Ereal_2Esup *to be* $\lambda V0P\in(2^{ty\_2Erealax\_2Ereal}).(ap\ (\mathsf{c\_2Emin\_2E\_40}\ ty\_2Ereal$

Let $c\_2Eextreal\_2ENegInf:\iota$ be given. Assume the following.

$$c\_2Eextreal\_2ENegInf\in ty\_2Eextreal\_2Eextreal \tag{31}$$

Let $c\_2Eextreal\_2EPosInf:\iota$ be given. Assume the following.

$$c\_2Eextreal\_2EPosInf\in ty\_2Eextreal\_2Eextreal \tag{32}$$

Definition 51 *We define* c_2Eextreal_2Eextreal__sup *to be* $\lambda V0p\in(2^{ty\_2Eextreal\_2Eextreal}).(ap\ (ap\ (ap\ (\mathsf{c\_2E}$

Definition 52 *We define* c_2Elebesgue_2Epos__fn__integral *to be* $\lambda A\_27a:\iota.\lambda V0m\in(ty\_2Epair\_2Eprod\ (2$

Definition 53 *We define* c_2Epred__set_2EUNIV *to be* $\lambda A\_27a:\iota.(\lambda V0x\in A\_27a.\mathsf{c\_2Ebool\_2ET})$.

Definition 54 *We define* c_2Eextreal_2Eext__mono__increasing *to be* $\lambda V0f\in(ty\_2Eextreal\_2Eextreal^{ty\_2E}$

Let $c\_2Emeasure\_2Esubsets:\iota\Rightarrow\iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow c\_2Emeasure\_2Esubsets\ A\_27a\in((2^{(2^{A\_27a})})^{(ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (2^{(2^{A\_27a})}))}) \tag{33}$$

Definition 55 *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 56 *We define* c_2Epred__set_2EINJ *to be* $\lambda A\_27a:\iota.\lambda A\_27b:\iota.\lambda V0f\in(A\_27b^{A\_27a}).\lambda V1s\in(2^{A}$

Definition 57 *We define* c_2Epred__set_2Ecountable *to be* $\lambda A\_27a:\iota.\lambda V0s\in(2^{A\_27a}).(ap\ (\mathsf{c\_2Ebool\_2E\_3F}$

Definition 58 *We define* c_2Epred__set_2EUNION *to be* $\lambda A\_27a:\iota.\lambda V0s\in(2^{A\_27a}).\lambda V1t\in(2^{A\_27a}).(ap\ (c.$

Let $c\_2Emeasure\_2Espace:\iota\Rightarrow\iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow c\_2Emeasure\_2Espace\ A\_27a\in((2^{A\_27a})^{(ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (2^{(2^{A\_27a})}))}) \tag{34}$$

Definition 59 *We define* c_2Epred__set_2EDIFF *to be* $\lambda A\_27a:\iota.\lambda V0s\in(2^{A\_27a}).\lambda V1t\in(2^{A\_27a}).(ap\ (c\_2$

Definition 60 *We define* c_2Emeasure_2Esubset__class *to be* $\lambda A\_27a:\iota.\lambda V0sp\in(2^{A\_27a}).\lambda V1sts\in(2^{(2^{A\_27}$

Definition 61 *We define* c_2Emeasure_2Ealgebra *to be* $\lambda A\_27a:\iota.\lambda V0a\in(ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (2^{(2}$

Definition 62 *We define* c_2Emeasure_2Esigma__algebra *to be* $\lambda A\_27a:\iota.\lambda V0a\in(ty\_2Epair\_2Eprod\ (2^{A\_2}$

Definition 63 *We define* c_2Epred__set_2EBIGINTER *to be* $\lambda A\_27a : \iota.\lambda V0P \in (2^{(2^{A\_27a})}).(ap\ (c\_2Epred\_\_s$

Definition 64 *We define* c_2Emeasure_2Esigma *to be* $\lambda A\_27a : \iota.\lambda V0sp \in (2^{A\_27a}).\lambda V1st \in (2^{(2^{A\_27a})}).(ap\ ($

Definition 65 *We define* c_2Emeasure_2EBorel *to be* $(ap\ (ap\ ($c_2Emeasure_2Esigma $ty\_2Eextreal\_2Eextre$

Definition 66 *We define* c_2Epred__set_2EPREIMAGE *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0f \in (A\_27b^{A\_27a}).\lambda V$

Definition 67 *We define* c_2Epred__set_2EFUNSET *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0P \in (2^{A\_27a}).\lambda V1Q \in ($

Definition 68 *We define* c_2Emeasure_2Emeasurable *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda V0a \in (ty\_2Epair\_2Epro$

Let $c\_2Ereal\_2Esum : \iota$ be given. Assume the following.

$$c\_2Ereal\_2Esum \in ((ty\_2Erealax\_2Ereal^{(ty\_2Erealax\_2Ereal^{ty\_2Enum\_2Enum})})^{(ty\_2Epair\_2Eprod\ ty\_2Enum\_2En} \tag{35}$$

Definition 69 *We define* c_2Earithmetic_2E_3E *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2En$

Definition 70 *We define* c_2Earithmetic_2E_3E_3D *to be* $\lambda V0m \in ty\_2Enum\_2Enum.\lambda V1n \in ty\_2Enum\_2$

Let $c\_2Erealax\_2Etreal\_\_neg : \iota$ be given. Assume the following.

$$c\_2Erealax\_2Etreal\_\_neg \in ((ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehreal)^{(ty\_2Epair\_2Eprod\ ty\_2Ehreal\_2Ehreal\ ty\_2Ehreal\_2Ehreal)}) \tag{36}$$

Definition 71 *We define* c_2Erealax_2Ereal__neg *to be* $\lambda V0T1 \in ty\_2Erealax\_2Ereal.(ap$ c_2Erealax_2Ereal

Definition 72 *We define* c_2Ereal_2Ereal__sub *to be* $\lambda V0x \in ty\_2Erealax\_2Ereal.\lambda V1y \in ty\_2Erealax\_2E$

Definition 73 *We define* c_2Ereal_2Eabs *to be* $\lambda V0x \in ty_2Erealax_2Ereal.(ap\ (ap\ (ap\ ($c_2Ebool_2ECON

Let $ty\_2Emetric\_2Emetric : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty\_2Emetric\_2Emetric\ A0) \tag{37}$$

Let $c\_2Emetric\_2Emetric : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Emetric\_2Emetric\ A\_27a \in ((ty\_2Emetric\_2Emetric\ A\_27a)^{(ty\_2Erealax\_2Ereal^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27a)})}) \tag{38}$$

Definition 74 *We define* c_2Emetric_2Emr1 *to be* $(ap\ (c_2Emetric_2Emetric\ ty_2Erealax_2Ereal)\ (ap\ ($c

Let $c\_2Emetric\_2Edist : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Emetric\_2Edist\ A\_27a \in ((ty\_2Erealax\_2Ereal^{(ty\_2Epair\_2Eprod\ A\_27a\ A\_27} \tag{39}$$

Let $ty\_2Etopology\_2Etopology : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty\_2Etopology\_2Etopology\ A0) \tag{40}$$

Let $c\_2Etopology\_2Etopology : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow c\_2Etopology\_2Etopology\ A\_27a \in ((ty\_2Etopology\_2Etopology\ A\_27a)^{(2^{(2^{A\_27a})})}) \tag{41}$$

Definition 75 *We define* c_2Emetric_2Emtop *to be* $\lambda A\_27a : \iota.\lambda V0m \in (ty\_2Emetric\_2Emetric\ A\_27a).(ap$

Let $c\_2Enets\_2Etends : \iota{\Rightarrow}\iota{\Rightarrow}\iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a{\Rightarrow}\forall A\_27b.nonempty\ A\_27b{\Rightarrow}c\_2Enets\_2Etends\ A\_27a\ A\_27b \in (((2^{(ty\_2Epair\_2Eprod\ (ty\_2Etopology\_2Etopology\ A\_27a)\ ((2^{A\_27b})^{A\_27b}))})^{A\_27a})^{(A\_27a^{A\_27b})}) \quad (42)$$

Definition 76 *We define* c_2Eseq_2E_2D_2D_3E *to be* $\lambda V0x \in (ty\_2Erealax\_2Ereal^{ty\_2Enum\_2Enum}).\lambda V1x$

Definition 77 *We define* c_2Eseq_2Esums *to be* $\lambda V0f \in (ty\_2Erealax\_2Ereal^{ty\_2Enum\_2Enum}).\lambda V1s \in ty\_$

Definition 78 *We define* c_2Emeasure_2Ecountably__additive *to be* $\lambda A\_27a : \iota.\lambda V0m \in (ty\_2Epair\_2Eprod$

Definition 79 *We define* c_2Emeasure_2Epositive *to be* $\lambda A\_27a : \iota.\lambda V0m \in (ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty$

Definition 80 *We define* c_2Emeasure_2Emeasure__space *to be* $\lambda A\_27a : \iota.\lambda V0m \in (ty\_2Epair\_2Eprod\ (2^{A}$

Definition 81 *We define* c_2Emeasure_2Efn__plus *to be* $\lambda A\_27a : \iota.\lambda V0f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).$

Assume the following.

$$True \quad (43)$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(((p\ V0t1){\Rightarrow}(p\ V1t2)){\Rightarrow}(((p\ V1t2){\Rightarrow}(p\ V0t1)){\Rightarrow}((p\ V0t1){\Leftrightarrow}(p\ V1t2)))))) \quad (44)$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a{\Rightarrow}(\forall V0t \in 2.((\forall V1x \in A\_27a.(p\ V0t)){\Leftrightarrow}(p\ V0t))) \quad (45)$$

Assume the following.

$$(\forall V0t \in 2.(((True{\wedge}(p\ V0t)){\Leftrightarrow}(p\ V0t)){\wedge}((((p\ V0t){\wedge}True){\Leftrightarrow}(p\ V0t)){\wedge}(((False{\wedge}(p\ V0t)){\Leftrightarrow}False){\wedge}((((p\ V0t){\wedge}False){\Leftrightarrow}False){\wedge}(((p\ V0t){\wedge}(p\ V0t)){\Leftrightarrow}(p\ V0t))))))) \quad (46)$$

Assume the following.

$$(\forall V0t \in 2.(((True{\Rightarrow}(p\ V0t)){\Leftrightarrow}(p\ V0t)){\wedge}((((p\ V0t){\Rightarrow}True){\Leftrightarrow}True){\wedge}(((False{\Rightarrow}(p\ V0t)){\Leftrightarrow}True){\wedge}((((p\ V0t){\Rightarrow}(p\ V0t)){\Leftrightarrow}True){\wedge}(((p\ V0t){\Rightarrow}False){\Leftrightarrow}(\neg(p\ V0t)))))))) \quad (47)$$

Assume the following.

$$((\forall V0t \in 2.((\neg(\neg(p\ V0t))){\Leftrightarrow}(p\ V0t))){\wedge}(((\neg True){\Leftrightarrow}False){\wedge}((\neg False){\Leftrightarrow}True))) \quad (48)$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.(V0x = V0x)) \tag{49}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.((V0x = V0x) \Leftrightarrow True)) \tag{50}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.(\forall V1y \in A\_27a.((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \tag{51}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0f \in (A\_27b^{A\_27a}).(\forall V1g \in (A\_27b^{A\_27a}).((V0f = V1g) \Leftrightarrow (\forall V2x \in A\_27a.((ap\ V0f\ V2x) = (ap\ V1g\ V2x)))))) \tag{52}$$

Assume the following.

$$(\forall V0t \in 2.(((True \Leftrightarrow (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge ((((p\ V0t) \Leftrightarrow True) \Leftrightarrow (p\ V0t)) \wedge (((False \Leftrightarrow (p\ V0t)) \Leftrightarrow (\neg (p\ V0t))) \wedge (((p\ V0t) \Leftrightarrow False) \Leftrightarrow (\neg (p\ V0t))))))) \tag{53}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0P \in (2^{A\_27a}).(\forall V1Q \in (2^{A\_27a}).((\forall V2x \in A\_27a.((p\ (ap\ V0P\ V2x)) \wedge (p\ (ap\ V1Q\ V2x)))) \Leftrightarrow ((\forall V3x \in A\_27a.(p\ (ap\ V0P\ V3x))) \wedge (\forall V4x \in A\_27a.(p\ (ap\ V1Q\ V4x))))))) \tag{54}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0P \in (2^{A\_27a}).(\forall V1Q \in 2.(((\forall V2x \in A\_27a.(p\ (ap\ V0P\ V2x))) \wedge (p\ V1Q)) \Leftrightarrow (\forall V3x \in A\_27a.((p\ (ap\ V0P\ V3x)) \wedge (p\ V1Q)))))) \tag{55}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0P \in 2.(\forall V1Q \in (2^{A\_27a}).(((p\ V0P) \wedge (\forall V2x \in A\_27a.(p\ (ap\ V1Q\ V2x)))) \Leftrightarrow (\forall V3x \in A\_27a.((p\ V0P) \wedge (p\ (ap\ V1Q\ V3x))))))) \tag{56}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0Q \in 2.(\forall V1P \in (2^{A\_27a}).((\forall V2x \in A\_27a.((p\ (ap\ V1P\ V2x)) \vee (p\ V0Q))) \Leftrightarrow ((\forall V3x \in A\_27a.(p\ (ap\ V1P\ V3x))) \vee (p\ V0Q))))) \tag{57}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0P \in 2.(\forall V1Q \in (2^{A\_27a}).((\forall V2x \in A\_27a.((p\ V0P) \vee (p\ (ap\ V1Q\ V2x)))) \Leftrightarrow ((p\ V0P) \vee (\forall V3x \in A\_27a.(p\ (ap\ V1Q\ V3x))))))) \tag{58}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(\forall V2C \in 2.(((p\ V0A) \vee ((p\ V1B) \wedge (p\ V2C))) \Leftrightarrow (((p\ V0A) \vee (p\ V1B)) \wedge ((p\ V0A) \vee (p\ V2C))))))) \tag{59}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(\forall V2C \in 2.((((p\ V1B) \wedge (p\ V2C)) \vee (p\ V0A)) \Leftrightarrow (((p\ V1B) \vee (p\ V0A)) \wedge ((p\ V2C) \vee (p\ V0A))))))) \tag{60}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(\forall V2t3 \in 2.(((p\ V0t1) \Rightarrow ((p\ V1t2) \Rightarrow (p\ V2t3))) \Leftrightarrow (((p\ V0t1) \wedge (p\ V1t2)) \Rightarrow (p\ V2t3)))))) \tag{61}$$

Assume the following.

$$(\forall V0x \in 2.(\forall V1x\_27 \in 2.(\forall V2y \in 2.(\forall V3y\_27 \in 2.((((p\ V0x) \Leftrightarrow (p\ V1x\_27)) \wedge ((p\ V1x\_27) \Rightarrow ((p\ V2y) \Leftrightarrow (p\ V3y\_27)))) \Rightarrow (((p\ V0x) \Rightarrow (p\ V2y)) \Leftrightarrow ((p\ V1x\_27) \Rightarrow (p\ V3y\_27)))))))) \tag{62}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.((ap\ (\mathsf{c\_2Ecombin\_2EI}\ A\_27a)\ V0x) = V0x)) \tag{63}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow (\forall V0f \in (A\_27b^{A\_27a}).(((ap\ (ap\ (\mathsf{c\_2Ecombin\_2Eo}\ A\_27a\ A\_27b\ A\_27b)\ (\mathsf{c\_2Ecombin\_2EI}\ A\_27b))\ V0f) = V0f) \wedge ((ap\ (ap\ (\mathsf{c\_2Ecombin\_2Eo}\ A\_27a\ A\_27b\ A\_27a)\ V0f)\ (\mathsf{c\_2Ecombin\_2EI}\ A\_27a)) = V0f))) \tag{64}$$

Assume the following.

$$(\forall V0x \in ty\_2Eextreal\_2Eextreal.(\forall V1y \in ty\_2Eextreal\_2Eextreal.(((p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ V0x)) \wedge (p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ V1y))) \Rightarrow (p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_add\ V0x)\ V1y)))))) \tag{65}$$

Assume the following.

$$(\forall V0w \in ty\_2Eextreal\_2Eextreal.(\forall V1x \in ty\_2Eextreal\_2Eextreal.(\forall V2y \in ty\_2Eextreal\_2Eextreal.(\forall V3z \in ty\_2Eextreal\_2Eextreal.(((p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ V0w)\ V1x)) \wedge (p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ V2y)\ V3z))) \Rightarrow (p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_add\ V0w)\ V2y))\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_add\ V1x)\ V3z)))))))) \tag{66}$$

Assume the following.

$$(\forall V0f \in (ty\_2Eextreal\_2Eextreal^{ty\_2Enum\_2Enum}).((p\ (ap\ \mathsf{c\_2Eextreal\_2Eext\_\_mono\_\_increasing}\ V0f)) \Leftrightarrow (\forall V1n \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ V0f\ V1n))\ (ap\ V0f\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V1n)))))))) \tag{67}$$

Assume the following.

$$(\forall V0f \in (ty\_2Eextreal\_2Eextreal^{ty\_2Enum\_2Enum}).(\forall V1g \in (ty\_2Eextreal\_2Eextreal^{ty\_2Enum\_2Enum}).(((\forall V2n \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ V0f\ V2n)))) \wedge ((\forall V3n \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ V0f\ V3n))\ (ap\ V0f\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V3n))))) \wedge ((\forall V4n \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ V1g\ V4n)))) \wedge (\forall V5n \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ V1g\ V5n))\ (ap\ V1g\ (ap\ \mathsf{c\_2Enum\_2ESUC}\ V5n)))))))) \Rightarrow ((ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_sup}\ (ap\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EIMAGE}\ ty\_2Enum\_2Enum\ ty\_2Eextreal\_2Eextreal)\ (\lambda V6n \in ty\_2Enum\_2Enum.(ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_add\ (ap\ V0f\ V6n))\ (ap\ V1g\ V6n))))\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Enum\_2Enum))) = (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_add\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_sup}\ (ap\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EIMAGE}\ ty\_2Enum\_2Enum\ ty\_2Eextreal\_2Eextreal)\ V0f)\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Enum\_2Enum))))\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_sup}\ (ap\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EIMAGE}\ ty\_2Enum\_2Enum\ ty\_2Eextreal\_2Eextreal)\ V1g)\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Enum\_2Enum)))))))) \tag{68}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0m \in (ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})}))). (\forall V1f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).(\forall V2g \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).(\forall V3a \in ty\_2Eextreal\_2Eextreal. (\forall V4b \in ty\_2Eextreal\_2Eextreal.(((p\ (ap\ (\mathsf{c\_2Emeasure\_2Emeasure\_\_space}\ A\_27a)\ V0m)) \wedge ((p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ ty\_2Eextreal\_2Eextreal)\ V3a)\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epsfis}\ A\_27a)\ V0m)\ V1f))) \wedge (p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ ty\_2Eextreal\_2Eextreal)\ V4b)\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epsfis}\ A\_27a)\ V0m)\ V2g))))) \Rightarrow (p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ ty\_2Eextreal\_2Eextreal)\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_add\ V3a)\ V4b))\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epsfis}\ A\_27a)\ V0m)\ (\lambda V5x \in A\_27a.(ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_add\ (ap\ V1f\ V5x))\ (ap\ V2g\ V5x)))))))))))) \tag{69}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0m \in (ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})}))). (\forall V1r \in ty\_2Eextreal\_2Eextreal.(\forall V2f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}). ((p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ ty\_2Eextreal\_2Eextreal)\ V1r)\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epsfis}\ A\_27a)\ V0m)\ V2f))) \Leftrightarrow (\exists V3s \in (2^{ty\_2Enum\_2Enum}). (\exists V4a \in ((2^{A\_27a})^{ty\_2Enum\_2Enum}).(\exists V5x \in (ty\_2Erealax\_2Ereal^{ty\_2Enum\_2Enum}). ((p\ (ap\ (ap\ (ap\ (ap\ (ap\ (\mathsf{c\_2Emeasure\_2Epos\_\_simple\_\_fn}\ A\_27a)\ V0m)\ V2f)\ V3s)\ V4a)\ V5x)) \wedge (V1r = (ap\ (ap\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_simple\_\_fn\_\_integral}\ A\_27a)\ V0m)\ V3s)\ V4a)\ V5x)))))))))) \tag{70}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0m \in (ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})}))). (\forall V1f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).(\forall V2s \in (2^{ty\_2Enum\_2Enum}).(\forall V3a \in ((2^{A\_27a})^{ty\_2Enum\_2Enum}). (\forall V4x \in (ty\_2Erealax\_2Ereal^{ty\_2Enum\_2Enum}).(((p\ (ap\ (\mathsf{c\_2Emeasure\_2Emeasure\_\_space}\ A\_27a)\ V0m)) \wedge (p\ (ap\ (ap\ (ap\ (ap\ (ap\ (\mathsf{c\_2Emeasure\_2Epos\_\_simple\_\_fn}\ A\_27a)\ V0m)\ V1f)\ V2s)\ V3a)\ V4x))) \Rightarrow ((ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral}\ A\_27a)\ V0m)\ V1f) = (ap\ (ap\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_simple\_\_fn\_\_integral}\ A\_27a)\ V0m)\ V2s)\ V3a)\ V4x)))))))) \tag{71}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0m \in (ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})}))).(\forall V1f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).(\forall V2g \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).((\forall V3x \in A\_27a.((p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ V1f\ V3x))) \land (p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ V1f\ V3x))\ (ap\ V2g\ V3x))))) \Rightarrow (p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral}\ A\_27a)\ V0m)\ V1f))\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral}\ A\_27a)\ V0m)\ V2g))))))) \tag{72}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0m \in (ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})}))).(\forall V1f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).(((p\ (ap\ (\mathsf{c\_2Emeasure\_2Emeasure\_\_space}\ A\_27a)\ V0m)) \land (\forall V2x \in A\_27a.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ V1f\ V2x))))) \Rightarrow (p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral}\ A\_27a)\ V0m)\ V1f)))))) \tag{73}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0m \in (ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})}))).\ (\forall V1f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).(\forall V2fi \in ((ty\_2Eextreal\_2Eextreal^{A\_27a})^{ty\_2Enum\_2Enum}).(((p\ (ap\ (\mathsf{c\_2Emeasure\_2Emeasure\_\_space}\ A\_27a)\ V0m)) \wedge ((\forall V3i \in ty\_2Enum\_2Enum.(p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ (ty\_2Eextreal\_2Eextreal^{A\_27a}))\ (ap\ V2fi\ V3i))\ (ap\ (ap\ (\mathsf{c\_2Emeasure\_2Emeasurable}\ A\_27a\ ty\_2Eextreal\_2Eextreal)\ (ap\ (ap\ (\mathsf{c\_2Epair\_2E\_2C}\ (2^{A\_27a})\ (2^{(2^{A\_27a})}))\ (ap\ (c\_2Emeasure\_2Em\_\_space\ A\_27a)\ V0m))\ (ap\ (c\_2Emeasure\_2Emeasurable\_\_sets\ A\_27a)\ V0m)))\ \mathsf{c\_2Emeasure\_2EBorel})))) \wedge ((\forall V4i \in ty\_2Enum\_2Enum.(\forall V5x \in A\_27a.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ (ap\ V2fi\ V4i)\ V5x))))) \wedge ((\forall V6x \in A\_27a.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ V1f\ V6x)))) \wedge ((\forall V7x \in A\_27a.(p\ (ap\ \mathsf{c\_2Eextreal\_2Eext\_\_mono\_\_increasing}\ (\lambda V8i \in ty\_2Enum\_2Enum.(ap\ (ap\ V2fi\ V8i)\ V7x))))) \wedge (\forall V9x \in A\_27a.((p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ A\_27a)\ V9x)\ (ap\ (c\_2Emeasure\_2Em\_\_space\ A\_27a)\ V0m))) \Rightarrow ((ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_sup}\ (ap\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EIMAGE}\ ty\_2Enum\_2Enum\ ty\_2Eextreal\_2Eextreal)\ (\lambda V10i \in ty\_2Enum\_2Enum.\ (ap\ (ap\ V2fi\ V10i)\ V9x)))\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Enum\_2Enum))) = (ap\ V1f\ V9x)))))))) \Rightarrow ((ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral}\ A\_27a)\ V0m)\ V1f) = (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_sup}\ (ap\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EIMAGE}\ ty\_2Enum\_2Enum\ ty\_2Eextreal\_2Eextreal)\ (\lambda V11i \in ty\_2Enum\_2Enum.\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral}\ A\_27a)\ V0m)\ (ap\ V2fi\ V11i))))\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Enum\_2Enum)))))))) \tag{74}$$

Assume the following.

$$
\begin{gathered}
\forall A\_27a.nonempty\ A\_27a{\Rightarrow}(\forall V0m \in (ty\_2Epair\_2Eprod \\
(2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})}))). \\
(\forall V1f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).(((p\ (ap\ (\mathsf{c\_2Emeasure\_2Emeasure\_\_space} \\
A\_27a)\ V0m))\wedge(p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ (ty\_2Eextreal\_2Eextreal^{A\_27a})) \\
V1f)\ (ap\ (ap\ (\mathsf{c\_2Emeasure\_2Emeasurable}\ A\_27a\ ty\_2Eextreal\_2Eextreal) \\
(ap\ (ap\ (\mathsf{c\_2Epair\_2E\_2C}\ (2^{A\_27a})\ (2^{(2^{A\_27a})}))\ (ap\ (c\_2Emeasure\_2Em\_\_space \\
A\_27a)\ V0m))\ (ap\ (c\_2Emeasure\_2Emeasurable\_\_sets\ A\_27a)\ V0m))) \\
\mathsf{c\_2Emeasure\_2EBorel}))))\Rightarrow((\exists V2fi \in ((ty\_2Eextreal\_2Eextreal^{A\_27a})^{ty\_2Enum\_2Enum}). \\
(\exists V3ri \in (ty\_2Eextreal\_2Eextreal^{ty\_2Enum\_2Enum}).((\forall V4x \in \\
A\_27a.(p\ (ap\ \mathsf{c\_2Eextreal\_2Eext\_\_mono\_\_increasing}\ (\lambda V5i \in \\
ty\_2Enum\_2Enum.(ap\ (ap\ V2fi\ V5i)\ V4x)))))\wedge((\forall V6x \in A\_27a. \\
((p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ A\_27a)\ V6x)\ (ap\ (c\_2Emeasure\_2Em\_\_space \\
A\_27a)\ V0m)))\Rightarrow((ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_sup}\ (ap\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EIMAGE} \\
ty\_2Enum\_2Enum\ ty\_2Eextreal\_2Eextreal)\ (\lambda V7i \in ty\_2Enum\_2Enum. \\
(ap\ (ap\ V2fi\ V7i)\ V6x)))\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Enum\_2Enum))) = \\
(ap\ (ap\ (\mathsf{c\_2Emeasure\_2Efn\_\_plus}\ A\_27a)\ V1f)\ V6x))))\wedge((\forall V8i \in \\
ty\_2Enum\_2Enum.(p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ ty\_2Eextreal\_2Eextreal) \\
(ap\ V3ri\ V8i))\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epsfis}\ A\_27a)\ V0m)\ (ap\ V2fi \\
V8i)))))\wedge((\forall V9i \in ty\_2Enum\_2Enum.(\forall V10x \in A\_27a. \\
(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ (ap\ V2fi\ V9i)\ V10x))\ (ap \\
(ap\ (\mathsf{c\_2Emeasure\_2Efn\_\_plus}\ A\_27a)\ V1f)\ V10x)))))\wedge((\forall V11i \in \\
ty\_2Enum\_2Enum.(\forall V12x \in A\_27a.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le \\
(ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ (ap\ V2fi \\
V11i)\ V12x)))))\wedge((ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral} \\
A\_27a)\ V0m)\ (ap\ (\mathsf{c\_2Emeasure\_2Efn\_\_plus}\ A\_27a)\ V1f)) = (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_sup} \\
(ap\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EIMAGE}\ ty\_2Enum\_2Enum\ ty\_2Eextreal\_2Eextreal) \\
(\lambda V13i \in ty\_2Enum\_2Enum.(ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral} \\
A\_27a)\ V0m)\ (ap\ V2fi\ V13i))))\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Enum\_2Enum))))))))))\wedge \\
(\exists V14gi \in ((ty\_2Eextreal\_2Eextreal^{A\_27a})^{ty\_2Enum\_2Enum}). \\
(\exists V15vi \in (ty\_2Eextreal\_2Eextreal^{ty\_2Enum\_2Enum}).((\\
\forall V16x \in A\_27a.(p\ (ap\ \mathsf{c\_2Eextreal\_2Eext\_\_mono\_\_increasing} \\
(\lambda V17i \in ty\_2Enum\_2Enum.(ap\ (ap\ V14gi\ V17i)\ V16x)))))\wedge((\forall V18x \in \\
A\_27a.((p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ A\_27a)\ V18x)\ (ap\ (c\_2Emeasure\_2Em\_\_space \\
A\_27a)\ V0m)))\Rightarrow((ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_sup}\ (ap\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EIMAGE} \\
ty\_2Enum\_2Enum\ ty\_2Eextreal\_2Eextreal)\ (\lambda V19i \in ty\_2Enum\_2Enum. \\
(ap\ (ap\ V14gi\ V19i)\ V18x)))\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Enum\_2Enum))) = \\
(ap\ (ap\ (\mathsf{c\_2Emeasure\_2Efn\_\_minus}\ A\_27a)\ V1f)\ V18x))))\wedge((\forall V20i \in \\
ty\_2Enum\_2Enum.(p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ ty\_2Eextreal\_2Eextreal) \\
(ap\ V15vi\ V20i))\ (ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epsfis}\ A\_27a)\ V0m)\ (ap\ V14gi \\
V20i)))))\wedge((\forall V21i \in ty\_2Enum\_2Enum.(\forall V22x \in A\_27a. \\
(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ (ap\ V14gi\ V21i)\ V22x)) \\
(ap\ (ap\ (\mathsf{c\_2Emeasure\_2Efn\_\_minus}\ A\_27a)\ V1f)\ V22x)))))\wedge((\forall V23i \in \\
ty\_2Enum\_2Enum.(\forall V24x \in A\_27a.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le \\
(ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ (ap\ V14gi \\
V23i)\ V24x)))))\wedge((ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral} \\
A\_27a)\ V0m)\ (ap\ (\mathsf{c\_2Emeasure\_2Efn\_\_minus}\ A\_27a)\ V1f)) = (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_sup} \\
(ap\ (ap\ (\mathsf{c\_2Epred\_\_set\_2EIMAGE}\ ty\_2Enum\_2Enum\ ty\_2Eextreal\_2Eextreal) \\
(\lambda V25i \in ty\_2Enum\_2Enum.(ap\ (ap\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral} \\
A\_27a)\ V0m)\ (ap\ V14gi\ V25i))))\ (\mathsf{c\_2Epred\_\_set\_2EUNIV}\ ty\_2Enum\_2Enum))))))))))))))
\end{gathered}
\tag{75}
$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0m \in (ty\_2Epair\_2Eprod\ (2^{A\_27a})\ (ty\_2Epair\_2Eprod\ (2^{(2^{A\_27a})})\ (ty\_2Erealax\_2Ereal^{(2^{A\_27a})}))).\ (\forall V1f \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).(((p\ (ap\ (\mathsf{c\_2Emeasure\_2Emeasure\_\_space}\ A\_27a)\ V0m)) \wedge (\exists V2s \in (2^{ty\_2Enum\_2Enum}).(\exists V3a \in ((2^{A\_27a})^{ty\_2Enum\_2Enum}).(\exists V4x \in (ty\_2Erealax\_2Ereal^{ty\_2Enum\_2Enum}).\ (p\ (ap\ (ap\ (ap\ (ap\ (ap\ (\mathsf{c\_2Emeasure\_2Epos\_\_simple\_\_fn}\ A\_27a)\ V0m)\ V1f)\ V2s)\ V3a)\ V4x)))))) \Rightarrow (p\ (ap\ (ap\ (\mathsf{c\_2Ebool\_2EIN}\ (ty\_2Eextreal\_2Eextreal^{A\_27a}))\ V1f)\ (ap\ (ap\ (\mathsf{c\_2Emeasure\_2Emeasurable}\ A\_27a\ ty\_2Eextreal\_2Eextreal)\ (ap\ (ap\ (\mathsf{c\_2Epair\_2E\_2C}\ (2^{A\_27a})\ (2^{(2^{A\_27a})}))\ (ap\ (c\_2Emeasure\_2Em\_\_space\ A\_27a)\ V0m))\ (ap\ (c\_2Emeasure\_2Emeasurable\_\_sets\ A\_27a)\ V0m)))\ \mathsf{c\_2Emeasure\_2EBorel}))))) \tag{76}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0g \in (ty\_2Eextreal\_2Eextreal^{A\_27a}).\ ((\forall V1x \in A\_27a.(p\ (ap\ (ap\ c\_2Eextreal\_2Eextreal\_\_le\ (ap\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (ap\ V0g\ V1x)))) \Rightarrow ((ap\ (\mathsf{c\_2Emeasure\_2Efn\_\_plus}\ A\_27a)\ V0g) = V0g))) \tag{77}$$

Assume the following.

$$(\forall V0t \in 2.((\neg(\neg(p\ V0t))) \Leftrightarrow (p\ V0t))) \tag{78}$$

Assume the following.

$$(\forall V0A \in 2.((p\ V0A) \Rightarrow ((\neg(p\ V0A)) \Rightarrow False))) \tag{79}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((p\ V0A) \vee (p\ V1B))) \Rightarrow False) \Leftrightarrow (((p\ V0A) \Rightarrow False) \Rightarrow ((\neg(p\ V1B)) \Rightarrow False))))) \tag{80}$$

Assume the following.

$$(\forall V0A \in 2.(\forall V1B \in 2.(((\neg((\neg(p\ V0A)) \vee (p\ V1B))) \Rightarrow False) \Leftrightarrow ((p\ V0A) \Rightarrow ((\neg(p\ V1B)) \Rightarrow False))))) \tag{81}$$

Assume the following.

$$(\forall V0A \in 2.(((\neg(p\ V0A)) \Rightarrow False) \Rightarrow (((p\ V0A) \Rightarrow False) \Rightarrow False))) \tag{82}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p) \Leftrightarrow ((p\ V1q) \Leftrightarrow (p\ V2r))) \Leftrightarrow (((p\ V0p) \vee ((p\ V1q) \vee (p\ V2r))) \wedge (((p\ V0p) \vee ((\neg(p\ V2r)) \vee (\neg(p\ V1q)))) \wedge (((p\ V1q) \vee ((\neg(p\ V2r)) \vee (\neg(p\ V0p)))) \wedge ((p\ V2r) \vee ((\neg(p\ V1q)) \vee (\neg(p\ V0p))))))))))) \tag{83}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\wedge(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee((\neg(p\ V1q))\vee(\neg(p\ V2r))))\wedge(((p\ V1q)\vee(\neg(p\ V0p)))\wedge((p\ V2r)\vee(\neg(p\ V0p))))))))) \tag{84}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\vee(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee(\neg(p\ V1q)))\wedge(((p\ V0p)\vee(\neg(p\ V2r)))\wedge((p\ V1q)\vee((p\ V2r)\vee(\neg(p\ V0p)))))))))) \tag{85}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(\forall V2r \in 2.(((p\ V0p)\Leftrightarrow((p\ V1q)\Rightarrow(p\ V2r)))\Leftrightarrow(((p\ V0p)\vee(p\ V1q))\wedge(((p\ V0p)\vee(\neg(p\ V2r)))\wedge((\neg(p\ V1q))\vee((p\ V2r)\vee(\neg(p\ V0p)))))))))) \tag{86}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.(((p\ V0p)\Leftrightarrow(\neg(p\ V1q)))\Leftrightarrow(((p\ V0p)\vee(p\ V1q))\wedge((\neg(p\ V1q))\vee(\neg(p\ V0p))))))) \tag{87}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\Rightarrow(p\ V1q)))\Rightarrow(p\ V0p)))) \tag{88}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\Rightarrow(p\ V1q)))\Rightarrow(\neg(p\ V1q))))) \tag{89}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\vee(p\ V1q)))\Rightarrow(\neg(p\ V0p))))) \tag{90}$$

Assume the following.

$$(\forall V0p \in 2.(\forall V1q \in 2.((\neg((p\ V0p)\vee(p\ V1q)))\Rightarrow(\neg(p\ V1q))))) \tag{91}$$

Assume the following.

$$(\forall V0p \in 2.((\neg(\neg(p\ V0p)))\Rightarrow(p\ V0p))) \tag{92}$$

Theorem 1

$$
\begin{gathered}
\forall \mathit{A\_27a}.\mathit{nonempty}\ \mathit{A\_27a}{\Rightarrow}(\forall \mathit{V0m} \in (\mathit{ty\_2Epair\_2Eprod} \\
(2^{\mathit{A\_27a}})\ (\mathit{ty\_2Epair\_2Eprod}\ (2^{(2^{\mathit{A\_27a}})})\ (\mathit{ty\_2Erealax\_2Ereal}^{(2^{\mathit{A\_27a}})}))). \\
(\forall \mathit{V1f} \in (\mathit{ty\_2Eextreal\_2Eextreal}^{\mathit{A\_27a}}).(\forall \mathit{V2g} \in (\\
\mathit{ty\_2Eextreal\_2Eextreal}^{\mathit{A\_27a}}).(((\mathit{p}\ (\mathit{ap}\ (\mathsf{c\_2Emeasure\_2Emeasure\_\_space} \\
\mathit{A\_27a})\ \mathit{V0m}))\wedge((\forall \mathit{V3x} \in \mathit{A\_27a}.((\mathit{p}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Eextreal\_2Eextreal\_\_le} \\
(\mathit{ap}\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num}\ \mathsf{c\_2Enum\_2E0}))\ (\mathit{ap}\ \mathit{V1f}\ \mathit{V3x})))\wedge \\
(\mathit{p}\ (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Eextreal\_2Eextreal\_\_le}\ (\mathit{ap}\ \mathsf{c\_2Eextreal\_2Eextreal\_\_of\_\_num} \\
\mathsf{c\_2Enum\_2E0}))\ (\mathit{ap}\ \mathit{V2g}\ \mathit{V3x})))))\wedge((\mathit{p}\ (\mathit{ap}\ (\mathit{ap}\ (\mathsf{c\_2Ebool\_2EIN}\ (\mathit{ty\_2Eextreal\_2Eextreal}^{\mathit{A\_27a}})) \\
\mathit{V1f})\ (\mathit{ap}\ (\mathit{ap}\ (\mathsf{c\_2Emeasure\_2Emeasurable}\ \mathit{A\_27a}\ \mathit{ty\_2Eextreal\_2Eextreal}) \\
(\mathit{ap}\ (\mathit{ap}\ (\mathsf{c\_2Epair\_2E\_2C}\ (2^{\mathit{A\_27a}})\ (2^{(2^{\mathit{A\_27a}})}))\ (\mathit{ap}\ (\mathit{c\_2Emeasure\_2Em\_\_space} \\
\mathit{A\_27a})\ \mathit{V0m}))\ (\mathit{ap}\ (\mathit{c\_2Emeasure\_2Emeasurable\_\_sets}\ \mathit{A\_27a})\ \mathit{V0m}))) \\
\mathsf{c\_2Emeasure\_2EBorel})))\wedge(\mathit{p}\ (\mathit{ap}\ (\mathit{ap}\ (\mathsf{c\_2Ebool\_2EIN}\ (\mathit{ty\_2Eextreal\_2Eextreal}^{\mathit{A\_27a}})) \\
\mathit{V2g})\ (\mathit{ap}\ (\mathit{ap}\ (\mathsf{c\_2Emeasure\_2Emeasurable}\ \mathit{A\_27a}\ \mathit{ty\_2Eextreal\_2Eextreal}) \\
(\mathit{ap}\ (\mathit{ap}\ (\mathsf{c\_2Epair\_2E\_2C}\ (2^{\mathit{A\_27a}})\ (2^{(2^{\mathit{A\_27a}})}))\ (\mathit{ap}\ (\mathit{c\_2Emeasure\_2Em\_\_space} \\
\mathit{A\_27a})\ \mathit{V0m}))\ (\mathit{ap}\ (\mathit{c\_2Emeasure\_2Emeasurable\_\_sets}\ \mathit{A\_27a})\ \mathit{V0m}))) \\
\mathsf{c\_2Emeasure\_2EBorel}))))))\Rightarrow((\mathit{ap}\ (\mathit{ap}\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral} \\
\mathit{A\_27a})\ \mathit{V0m})\ (\lambda \mathit{V4x} \in \mathit{A\_27a}.(\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Eextreal\_2Eextreal\_\_add} \\
(\mathit{ap}\ \mathit{V1f}\ \mathit{V4x}))\ (\mathit{ap}\ \mathit{V2g}\ \mathit{V4x})))) = (\mathit{ap}\ (\mathit{ap}\ \mathit{c\_2Eextreal\_2Eextreal\_\_add} \\
(\mathit{ap}\ (\mathit{ap}\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral}\ \mathit{A\_27a})\ \mathit{V0m})\ \mathit{V1f}))\ (\\
\mathit{ap}\ (\mathit{ap}\ (\mathsf{c\_2Elebesgue\_2Epos\_\_fn\_\_integral}\ \mathit{A\_27a})\ \mathit{V0m})\ \mathit{V2g})))))))
\end{gathered}
$$