

thm_2Emeasure_2EINF__MEASURE__POSITIVE (TMaEHC- QYvcwX66dTCqx4G8hRY3gqGSnbFxr)

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

Definition 4 We define $c_2Ebool_2E_2F$ to be $(ap (c_2Ebool_2E_21 2) (\lambda V0t \in 2.V0t))$.

Definition 5 We define $c_2Emin_2E_3D_3D_3E$ to be $\lambda P \in 2.\lambda Q \in 2.inj_o (p \Rightarrow P \Rightarrow Q)$ of type ι .

Definition 6 We define $c_2Ebool_2E_7E$ to be $(\lambda V0t \in 2.(ap (ap c_2Emin_2E_3D_3D_3E V0t) c_2Ebool_2E_2F$

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

$$nonempty \ ty_2Erealax_2Ereal \tag{1}$$

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 $c_2Emeasure_2Emeasure : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty \ A_27a \Rightarrow c_2Emeasure_2Emeasure \ A_27a \in (ty_2Erealax_2Ereal^{(2^{A_27a})})(ty_2Epair_2Eprod \ (2^{A_27a}) \ (ty_2Epair_2Eprod \ (2^{(2^{A_27a})})) \ (ty_2Erealax_2Ereal^{(2^{A_27a})})) \tag{3}$$

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

$$nonempty \ ty_2Ehreal_2Ehreal \tag{4}$$

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

$$c_2Erealax_2Ereal_REP_CLASS \in ((2^{(ty_2Epair_2Eprod \ ty_2Ehreal_2Ehreal \ ty_2Ehreal_2Ehreal)} ty_2Erealax_2Ereal) \tag{5}$$

Definition 16 We define c_2Enum_2ESUC to be $\lambda V0m \in ty_2Enum_2Enum.(ap\ c_2Enum_2EABS_num$

Definition 17 We define $c_2Ebool_2E_3F$ to be $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap\ V0P\ (ap\ (c_2Emin_2E_40$

Definition 18 We define $c_2Eprim_rec_2E_3C$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Definition 19 We define $c_2Earithmetic_2E_3E$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Definition 20 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 21 We define $c_2Earithmetic_2E_3E_3D$ to be $\lambda V0m \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enum$

Let $c_2Erealax_2Etreax_neg : \iota$ be given. Assume the following.

$$c_2Erealax_2Etreax_neg \in ((ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)}) \quad (15)$$

Let $c_2Erealax_2Etreax_eq : \iota$ be given. Assume the following.

$$c_2Erealax_2Etreax_eq \in ((2^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal)}) \quad (16)$$

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

$$c_2Erealax_2Ereal_ABS_CLASS \in (ty_2Erealax_2Ereal)^{(2^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)})} \quad (17)$$

Definition 22 We define $c_2Erealax_2Ereal_ABS$ to be $\lambda V0r \in (ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)$

Definition 23 We define $c_2Erealax_2Ereal_neg$ to be $\lambda V0T1 \in ty_2Erealax_2Ereal.(ap\ c_2Erealax_2Ereal$

Let $c_2Erealax_2Etreax_add : \iota$ be given. Assume the following.

$$c_2Erealax_2Etreax_add \in (((ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)})^{(ty_2Epair_2Eprod\ ty_2Ehreal_2Ehreal\ ty_2Ehreal_2Ehreal)}) \quad (18)$$

Definition 24 We define $c_2Erealax_2Ereal_add$ to be $\lambda V0T1 \in ty_2Erealax_2Ereal.\lambda V1T2 \in ty_2Erealax_2Ereal$

Definition 25 We define $c_2Ereal_2Ereal_sub$ to be $\lambda V0x \in ty_2Erealax_2Ereal.\lambda V1y \in ty_2Erealax_2Ereal$

Definition 26 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 27 We define c_2Ereal_2Eabs to be $\lambda V0x \in ty_2Erealax_2Ereal.(ap\ (ap\ (ap\ (c_2Ebool_2ECOND$

Let $c_2Epair_2ESND : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow \forall A_27b.nonempty\ A_27b \Rightarrow c_2Epair_2ESND\ A_27a\ A_27b \in (A_27b)^{(ty_2Epair_2Eprod\ A_27a\ A_27b)} \quad (19)$$

Let $c_2Epair_2EFST : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow \forall A_27b.nonempty\ A_27b \Rightarrow c_2Epair_2EFST\ A_27a\ A_27b \in (A_27a)^{(ty_2Epair_2Eprod\ A_27a\ A_27b)} \quad (20)$$

Definition 28 We define $c_2Epair_2EUNCURRY$ to be $\lambda A_27a : \iota. \lambda A_27b : \iota. \lambda A_27c : \iota. \lambda V0f \in ((A_27c)^{A_27a})$.
Let $ty_2Emetric_2Emetric : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2Emetric_2Emetric\ A0) \quad (21)$$

Let $c_2Emetric_2Emetric : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Emetric_2Emetric\ A_27a \in ((ty_2Emetric_2Emetric\ A_27a)^{(ty_2Erealax_2Ereal\ (ty_2Epair_2Eprod\ A_27a\ A_27a))}) \quad (22)$$

Definition 29 We define $c_2Emetric_2Emr1$ to be $(ap\ (c_2Emetric_2Emetric\ ty_2Erealax_2Ereal)\ (ap\ (c_2Emetric_2Emetric\ ty_2Erealax_2Ereal)))$.
Let $c_2Emetric_2Edist : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Emetric_2Edist\ A_27a \in ((ty_2Erealax_2Ereal\ (ty_2Epair_2Eprod\ A_27a\ A_27a))^{(ty_2Emetric_2Emetric\ A_27a)}) \quad (23)$$

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

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2Etopology_2Etopology\ A0) \quad (24)$$

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

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Etopology_2Etopology\ A_27a \in ((ty_2Etopology_2Etopology\ A_27a)^{(2^{(2^{A_27a})})}) \quad (25)$$

Definition 30 We define $c_2Emetric_2Emtop$ to be $\lambda A_27a : \iota. \lambda V0m \in (ty_2Emetric_2Emetric\ A_27a). (ap\ (c_2Emetric_2Emetric\ ty_2Emetric_2Emetric\ A_27a))$.
Let $c_2Enets_2Etends : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow \forall A_27b.nonempty\ A_27b \Rightarrow c_2Enets_2Etends\ A_27a\ A_27b \in (((2^{(ty_2Epair_2Eprod\ (ty_2Etopology_2Etopology\ A_27a)\ (2^{A_27b})^{A_27b}))})^{A_27a})^{(A_27a)^{A_27b}}) \quad (26)$$

Definition 31 We define $c_2Eseq_2E_2D_2D_3E$ to be $\lambda V0x \in (ty_2Erealax_2Ereal^{ty_2Enum_2Enum}). \lambda V1x \in (ty_2Erealax_2Ereal^{ty_2Enum_2Enum}). \lambda V1s \in ty_2Erealax_2Ereal^{ty_2Enum_2Enum}$.

Definition 32 We define c_2Eseq_2Esums to be $\lambda V0f \in (ty_2Erealax_2Ereal^{ty_2Enum_2Enum}). \lambda V1s \in ty_2Erealax_2Ereal^{ty_2Enum_2Enum}$.

Definition 33 We define $c_2Epred_set_2EUNIV$ to be $\lambda A_27a : \iota. (\lambda V0x \in A_27a. c_2Ebool_2ET)$.

Definition 34 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 $c_2Epred_set_2EGSPEC : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow \forall A_27b.nonempty\ A_27b \Rightarrow c_2Epred_set_2EGSPEC\ A_27a\ A_27b \in ((2^{A_27a})^{(ty_2Epair_2Eprod\ A_27a\ 2)^{A_27b}}) \quad (27)$$

Definition 35 We define $c_2Epred_set_2EIMAGE$ to be $\lambda A_27a : \iota. \lambda A_27b : \iota. \lambda V0f \in (A_27b)^{A_27a}. \lambda V1s \in (A_27b)^{A_27a}$.

Definition 36 We define $c_2Epred_set_2EBIGUNION$ to be $\lambda A_27a : \iota. \lambda V0P \in (2^{(2^{A-27a})}). (ap (c_2Epred_set_2EBIGUNION) P)$

Definition 37 We define $c_2Epred_set_2ESUBSET$ to be $\lambda A_27a : \iota. \lambda V0s \in (2^{A-27a}). \lambda V1t \in (2^{A-27a}). (ap (c_2Epred_set_2ESUBSET) s t)$

Definition 38 We define $c_2Epred_set_2EINTER$ to be $\lambda A_27a : \iota. \lambda V0s \in (2^{A-27a}). \lambda V1t \in (2^{A-27a}). (ap (c_2Epred_set_2EINTER) s t)$

Definition 39 We define $c_2Epred_set_2EDISJOINT$ to be $\lambda A_27a : \iota. \lambda V0s \in (2^{A-27a}). \lambda V1t \in (2^{A-27a}). (ap (c_2Epred_set_2EDISJOINT) s t)$

Let $c_2Emeasure_2Emeasurable_sets : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall A_27a. nonempty A_27a \Rightarrow c_2Emeasure_2Emeasurable_sets \\ & A_27a \in ((2^{(2^{A-27a})}) (ty_2Epair_2Eprod (2^{A-27a}) (ty_2Epair_2Eprod (2^{(2^{A-27a})}) (ty_2Erealax_2Ereal (2^{A-27a})))))) \end{aligned} \quad (28)$$

Definition 40 We define $c_2Epred_set_2EFUNSET$ to be $\lambda A_27a : \iota. \lambda A_27b : \iota. \lambda V0P \in (2^{A-27a}). \lambda V1Q \in (2^{A-27b}). (ap (c_2Epred_set_2EFUNSET) P Q)$

Definition 41 We define c_2Ereal_2Esup to be $\lambda V0P \in (2^{ty_2Erealax_2Ereal}). (ap (c_2Emin_2E40 ty_2Ereal P))$

Definition 42 We define c_2Ereal_2Einf to be $\lambda V0p \in (2^{ty_2Erealax_2Ereal}). (ap c_2Erealax_2Ereal_neg (ap c_2Ereal P))$

Definition 43 We define $c_2Emeasure_2Einf_measure$ to be $\lambda A_27a : \iota. \lambda V0m \in (ty_2Epair_2Eprod (2^{A-27a}) (ty_2Erealax_2Ereal (2^{A-27a})))$

Definition 44 We define $c_2Emeasure_2Epositive$ to be $\lambda A_27a : \iota. \lambda V0m \in (ty_2Epair_2Eprod (2^{A-27a}) (ty_2Erealax_2Ereal (2^{A-27a})))$

Let $c_2Emeasure_2Em_space : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall A_27a. nonempty A_27a \Rightarrow c_2Emeasure_2Em_space A_27a \in \\ & ((2^{A-27a}) (ty_2Epair_2Eprod (2^{A-27a}) (ty_2Epair_2Eprod (2^{(2^{A-27a})}) (ty_2Erealax_2Ereal (2^{A-27a})))))) \end{aligned} \quad (29)$$

Let $c_2Emeasure_2Esubsets : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall A_27a. nonempty A_27a \Rightarrow c_2Emeasure_2Esubsets A_27a \in (\\ & (2^{(2^{A-27a})}) (ty_2Epair_2Eprod (2^{A-27a}) (2^{(2^{A-27a})}))) \end{aligned} \quad (30)$$

Definition 45 We define $c_2Epred_set_2EUNION$ to be $\lambda A_27a : \iota. \lambda V0s \in (2^{A-27a}). \lambda V1t \in (2^{A-27a}). (ap (c_2Epred_set_2EUNION) s t)$

Let $c_2Emeasure_2Espace : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall A_27a. nonempty A_27a \Rightarrow c_2Emeasure_2Espace A_27a \in ((2^{A-27a}) (ty_2Epair_2Eprod (2^{A-27a}) (2^{(2^{A-27a})}))) \end{aligned} \quad (31)$$

Definition 46 We define $c_2Epred_set_2EDIFF$ to be $\lambda A_27a : \iota. \lambda V0s \in (2^{A-27a}). \lambda V1t \in (2^{A-27a}). (ap (c_2Epred_set_2EDIFF) s t)$

Definition 47 We define $c_2Emeasure_2Esubset_class$ to be $\lambda A_27a : \iota. \lambda V0sp \in (2^{A-27a}). \lambda V1sts \in (2^{(2^{A-27a})})$

Definition 48 We define $c_2Emeasure_2Ealgebra$ to be $\lambda A_27a : \iota. \lambda V0a \in (ty_2Epair_2Eprod (2^{A-27a}) (2^{(2^{A-27a})}))$

Definition 49 We define $c_2Epred_set_2EPOW$ to be $\lambda A_27a : \iota. \lambda V0set \in (2^{A-27a}). (ap (c_2Epred_set_2EPOW) s)$

Assume the following.

$$True \quad (32)$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0t \in 2. ((\forall V1x \in A_27a.(p\ V0t)) \Leftrightarrow (p\ V0t))) \quad (33)$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2. (((True \wedge (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge (((p\ V0t) \wedge True) \Leftrightarrow \\ & (p\ V0t)) \wedge (((False \wedge (p\ V0t)) \Leftrightarrow False) \wedge (((p\ V0t) \wedge False) \Leftrightarrow False) \wedge \\ & (((p\ V0t) \wedge (p\ V0t)) \Leftrightarrow (p\ V0t)))))) \end{aligned} \quad (34)$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2. (((True \Rightarrow (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge (((p\ V0t) \Rightarrow True) \Leftrightarrow \\ & True) \wedge (((False \Rightarrow (p\ V0t)) \Leftrightarrow True) \wedge (((p\ V0t) \Rightarrow (p\ V0t)) \Leftrightarrow True) \wedge ((\\ & (p\ V0t) \Rightarrow False) \Leftrightarrow (\neg(p\ V0t)))))) \end{aligned} \quad (35)$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0x \in A_27a. ((V0x = V0x) \Leftrightarrow True)) \quad (36)$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0x \in A_27a. (\forall V1y \in A_27a. ((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \quad (37)$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2. (((True \Leftrightarrow (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge (((p\ V0t) \Leftrightarrow True) \Leftrightarrow \\ & (p\ V0t)) \wedge (((False \Leftrightarrow (p\ V0t)) \Leftrightarrow (\neg(p\ V0t))) \wedge (((p\ V0t) \Leftrightarrow False) \Leftrightarrow (\neg(\\ & p\ V0t)))))) \end{aligned} \quad (38)$$

Assume the following.

$$\begin{aligned} & (\forall V0t1 \in 2. (\forall V1t2 \in 2. (\forall V2t3 \in 2. (((p\ V0t1) \Rightarrow \\ & ((p\ V1t2) \Rightarrow (p\ V2t3))) \Leftrightarrow (((p\ V0t1) \wedge (p\ V1t2)) \Rightarrow (p\ V2t3)))))) \end{aligned} \quad (39)$$

Assume the following.

$$\begin{aligned} & (\forall V0x \in 2. (\forall V1x_27 \in 2. (\forall V2y \in 2. (\forall V3y_27 \in \\ & 2. (((p\ V0x) \Leftrightarrow (p\ V1x_27)) \wedge ((p\ V1x_27) \Rightarrow ((p\ V2y) \Leftrightarrow (p\ V3y_27)))) \Rightarrow \\ & (((p\ V0x) \Rightarrow (p\ V2y)) \Leftrightarrow ((p\ V1x_27) \Rightarrow (p\ V3y_27)))))) \end{aligned} \quad (40)$$

Assume the following.

$$\begin{aligned} & \forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0sp \in (2^{A_27a}). (\forall V1sts \in \\ & (2^{(2^{A_27a})}). (\forall V2mu \in (ty_2Erealax_2Ereal^{(2^{A_27a})}). \\ & ((ap\ (c_2Emeasure_2Emeasurable_sets\ A_27a)\ (ap\ (ap\ (c_2Epair_2E_2C \\ & (2^{A_27a})\ (ty_2Epair_2Eprod\ (2^{(2^{A_27a})})\ (ty_2Erealax_2Ereal^{(2^{A_27a})}))) \\ & V0sp)\ (ap\ (ap\ (c_2Epair_2E_2C\ (2^{(2^{A_27a})})\ (ty_2Erealax_2Ereal^{(2^{A_27a})})) \\ & V1sts)\ V2mu))) = V1sts)))) \end{aligned} \quad (41)$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0sp \in (2^{A-27a}).(\forall V1sts \in \\
& \quad (2^{(2^{A-27a})}).(\forall V2mu \in (ty_2Erealax_2Ereal^{(2^{A-27a})}). \\
& \quad ((ap\ (c_2Emeasure_2Emeasure\ A.27a)\ (ap\ (ap\ (c_2Epair_2E_2C\ (2^{A-27a}) \\
& \quad \quad (ty_2Epair_2Eprod\ (2^{(2^{A-27a})})\ (ty_2Erealax_2Ereal^{(2^{A-27a})}))) \\
& \quad V0sp)\ (ap\ (ap\ (c_2Epair_2E_2C\ (2^{(2^{A-27a})})\ (ty_2Erealax_2Ereal^{(2^{A-27a})}) \\
& \quad \quad V1sts)\ V2mu)))) = V2mu))))))
\end{aligned} \tag{42}$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0m \in (ty_2Epair_2Eprod \\
& \quad (2^{A-27a})\ (ty_2Epair_2Eprod\ (2^{(2^{A-27a})})\ (ty_2Erealax_2Ereal^{(2^{A-27a})}))). \\
& \quad (\forall V1g \in (2^{A-27a}).(((p\ (ap\ (c_2Emeasure_2Ealgebra\ A.27a) \\
& \quad (ap\ (ap\ (c_2Epair_2E_2C\ (2^{A-27a})\ (2^{(2^{A-27a})})))\ (ap\ (c_2Emeasure_2Em_space \\
& \quad \quad A.27a)\ V0m)))\ (ap\ (c_2Emeasure_2Emeasurable_sets\ A.27a)\ V0m)))) \wedge \\
& \quad ((p\ (ap\ (c_2Emeasure_2Epositive\ A.27a)\ V0m)) \wedge (p\ (ap\ (ap\ (c_2Epred_set_2ESUBSET \\
& \quad \quad A.27a)\ V1g)\ (ap\ (c_2Emeasure_2Em_space\ A.27a)\ V0m)))))) \Rightarrow (p\ (ap \\
& \quad (ap\ c_2Ereal_2Ereal_lte\ (ap\ c_2Ereal_2Ereal_of_num\ c_2Enum_2E0)) \\
& \quad (ap\ (ap\ (c_2Emeasure_2Einf_measure\ A.27a)\ V0m)\ V1g))))))
\end{aligned} \tag{43}$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0m \in (ty_2Epair_2Eprod \\
& \quad (2^{A-27a})\ (ty_2Epair_2Eprod\ (2^{(2^{A-27a})})\ (ty_2Erealax_2Ereal^{(2^{A-27a})}))). \\
& \quad (((p\ (ap\ (c_2Emeasure_2Ealgebra\ A.27a)\ (ap\ (ap\ (c_2Epair_2E_2C \\
& \quad \quad (2^{A-27a})\ (2^{(2^{A-27a})})))\ (ap\ (c_2Emeasure_2Em_space\ A.27a) \\
& \quad \quad V0m)))\ (ap\ (c_2Emeasure_2Emeasurable_sets\ A.27a)\ V0m)))) \wedge (p \\
& \quad (ap\ (c_2Emeasure_2Epositive\ A.27a)\ V0m))) \Rightarrow ((ap\ (ap\ (c_2Emeasure_2Einf_measure \\
& \quad \quad A.27a)\ V0m)\ (c_2Epred_set_2EEMPTY\ A.27a)) = (ap\ c_2Ereal_2Ereal_of_num \\
& \quad \quad c_2Enum_2E0))))))
\end{aligned} \tag{44}$$

Assume the following.

$$\begin{aligned}
& \forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0set \in (2^{A-27a}).(\forall V1e \in \\
& \quad (2^{A-27a}).((p\ (ap\ (ap\ (c_2Ebool_2EIN\ (2^{A-27a})\ V1e)\ (ap\ (c_2Epred_set_2EPOW \\
& \quad \quad A.27a)\ V0set)))) \Leftrightarrow (p\ (ap\ (ap\ (c_2Epred_set_2ESUBSET\ A.27a)\ V1e) \\
& \quad \quad V0set))))))
\end{aligned} \tag{45}$$

Theorem 1

$$\begin{aligned}
& \forall A_{27a}. \text{nonempty } A_{27a} \Rightarrow (\forall V0m \in (ty_2Epair_2Eprod \\
& (2^{A_{27a}}) (ty_2Epair_2Eprod (2^{(2^{A_{27a}})}) (ty_2Erealax_2Ereal(2^{A_{27a}}))))). \\
& (((p (ap (c_2Emeasure_2Ealgebra A_{27a}) (ap (ap (c_2Epair_2E_2C \\
& (2^{A_{27a}}) (2^{(2^{A_{27a}})})) (ap (c_2Emeasure_2Em_space A_{27a}) \\
& V0m)) (ap (c_2Emeasure_2Emeasurable_sets A_{27a}) V0m)))) \wedge (p \\
& (ap (c_2Emeasure_2Epositive A_{27a}) V0m))) \Rightarrow (p (ap (c_2Emeasure_2Epositive \\
& A_{27a}) (ap (ap (c_2Epair_2E_2C (2^{A_{27a}}) (ty_2Epair_2Eprod (2^{(2^{A_{27a}})}) \\
& (ty_2Erealax_2Ereal(2^{A_{27a}})))) (ap (c_2Emeasure_2Em_space \\
& A_{27a}) V0m)) (ap (ap (c_2Epair_2E_2C (2^{(2^{A_{27a}})}) (ty_2Erealax_2Ereal(2^{A_{27a}}))) \\
& (ap (c_2Epred_set_2EPOW A_{27a}) (ap (c_2Emeasure_2Em_space \\
& A_{27a}) V0m))) (ap (c_2Emeasure_2Einf_measure A_{27a}) V0m))))))
\end{aligned}$$