

t1_heine (TM- SNuLEo7EPap4q35QUfUJbhyFASJZTBQ3M)

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Let $v1_xreal_0 : \iota \Rightarrow o$ be given. Let $m1_topmetr : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k8_metric_1 : \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k4_metric_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k18_complex1 : \iota \Rightarrow \iota$ be given. Let $k6_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_numbers : \iota$ be given. Let $k9_real_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v8_metric_1 : \iota \Rightarrow o$ be given. Let $l1_metric_1 : \iota \Rightarrow o$ be given. Let $k2_metric_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_metric_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $g1_metric_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_metric_1 : \iota \Rightarrow o$ be given. Let $v6_metric_1 : \iota \Rightarrow o$ be given. Let $v7_metric_1 : \iota \Rightarrow o$ be given. Let $v9_metric_1 : \iota \Rightarrow o$ be given. Let $k7_metric_1 : \iota$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_metric_1 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1_subset_1 X0 X1) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. ((m1_subset_1 X0 k1_numbers) \wedge (v1_xreal_0 X1)) \Rightarrow (k9_real_1 X0 X1 = k6_xcmplx_0 X0 X1) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (((v8_metric_1 X0) \wedge (l1_metric_1 X0)) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow (k4_metric_1 X0 X1 X2 = k2_metric_1 X0 X1 X2) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((v1_funct_1 X2) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X0 X1) k1_numbers)))) \wedge ((m1_subset_1 X3 X0) \wedge (m1_subset_1 X4 X1))) \Rightarrow (k1_metric_1 X0 X1 X2 X3 X4 = k1_binop_1 X2 X3 X4) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k2_zfmisc_1 \\ & X0 X0) k1_numbers) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) k1_numbers)))))) \Rightarrow (\forall X2. \forall X3. (\\ & g1_metric_1 X0 X1 = g1_metric_1 X2 X3) \Rightarrow ((X0 = X2) \wedge (X1 = X3))) \end{aligned} \quad (5)$$

Assume the following.

$$(v1_metric_1 k8_metric_1) \wedge ((v6_metric_1 k8_metric_1) \wedge ((v7_metric_1 k8_metric_1) \wedge ((v8_metric_1 k8_metric_1) \wedge ((v9_metric_1 k8_metric_1)))))) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v6_metric_1 X0) \wedge ((v7_metric_1 X0) \wedge ((v8_metric_1 \\ & X0) \wedge ((v9_metric_1 X0) \wedge (l1_metric_1 X0)))))) \Rightarrow (\forall X1. (m1_topmetr \\ & X1 X0) \Rightarrow ((v6_metric_1 X1) \wedge ((v7_metric_1 X1) \wedge ((v8_metric_1 X1) \wedge \\ & ((v9_metric_1 X1) \wedge (l1_metric_1 X1)))))) \end{aligned} \quad (7)$$

Assume the following.

$$(v1_metric_1 k8_metric_1) \wedge (l1_metric_1 k8_metric_1) \quad (8)$$

Assume the following.

$$\begin{aligned} & (v1_funct_1 k7_metric_1) \wedge ((v1_funct_2 k7_metric_1 (k2_zfmisc_1 \\ & k1_numbers k1_numbers) k1_numbers) \wedge (m1_subset_1 k7_metric_1 \\ & (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers) \\ & k1_numbers)))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0. (v1_xreal_0 X0) \Leftrightarrow (X0 \in k1_numbers) \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v6_metric_1 X0) \wedge ((v7_metric_1 X0) \wedge ((v8_metric_1 \\ & X0) \wedge ((v9_metric_1 X0) \wedge (l1_metric_1 X0)))))) \Rightarrow (\forall X1. ((v6_metric_1 \\ & X1) \wedge ((v7_metric_1 X1) \wedge ((v8_metric_1 X1) \wedge ((v9_metric_1 X1) \wedge \\ & (l1_metric_1 X1)))))) \Rightarrow ((m1_topmetr X1 X0) \Leftrightarrow ((r1_tarski (u1_struct_0 \\ & X1) (u1_struct_0 X0)) \wedge (\forall X2. (m1_subset_1 X2 (u1_struct_0 \\ & X1)) \Rightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 X1)) \Rightarrow (k1_metric_1 \\ & (u1_struct_0 X1) (u1_struct_0 X1) (u1_metric_1 X1) X2 X3 = k1_binop_1 \\ & (u1_metric_1 X0) X2 X3)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. (l1_metric_1 X0) \Rightarrow (\forall X1. (m1_subset_1 X1 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X2. (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (k2_metric_1 \\ & X0 X1 X2 = k1_metric_1 (u1_struct_0 X0) (u1_struct_0 X0) (u1_metric_1 \\ & X0) X1 X2))) \end{aligned} \quad (12)$$

Assume the following.

$$k8_metric_1 = g1_metric_1 \ k1_numbers \ k7_metric_1 \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0.((v1_funct_1 \ X0) \wedge ((v1_funct_2 \ X0 \ (k2_zfmisc_1 \ k1_numbers \\ k1_numbers) \ k1_numbers) \wedge (m1_subset_1 \ X0 \ (k1_zfmisc_1 \ (k2_zfmisc_1 \\ (k2_zfmisc_1 \ k1_numbers \ k1_numbers) \ k1_numbers)))))) \Rightarrow ((X0 = k7_metric_1) \Leftrightarrow \\ (\forall X1.(m1_subset_1 \ X1 \ k1_numbers) \Rightarrow (\forall X2.(m1_subset_1 \\ X2 \ k1_numbers) \Rightarrow (k1_metric_1 \ k1_numbers \ k1_numbers \ X0 \ X1 \ X2 = k18_complex1 \\ (k9_real_1 \ X1 \ X2)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\forall X0.(l1_metric_1 \ X0) \Rightarrow ((v1_metric_1 \ X0) \Rightarrow (X0 = g1_metric_1 \ (u1_struct_0 \ X0) \ (u1_metric_1 \ X0))) \quad (15)$$

Theorem 1

$$\begin{aligned} \forall X0.(v1_xreal_0 \ X0) \Rightarrow (\forall X1.(v1_xreal_0 \ X1) \Rightarrow (\forall X2. \\ (m1_topmetr \ X2 \ k8_metric_1) \Rightarrow (\forall X3.(m1_subset_1 \ X3 \ (u1_struct_0 \\ X2)) \Rightarrow (\forall X4.(m1_subset_1 \ X4 \ (u1_struct_0 \ X2)) \Rightarrow (((X0 = X3) \wedge \\ (X1 = X4)) \Rightarrow (k4_metric_1 \ X2 \ X3 \ X4 = k18_complex1 \ (k6_xcmplx_0 \ X0 \ X1))))))) \end{aligned}$$