

t67_xxreal_3 (TM-
Npx3wRqqPMRS8vgUSN9TbJmh2PXNdHjnR)

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Let $v1_xxreal_0 : \iota \Rightarrow o$ be given. Let $k5_xxreal_3 : \iota \Rightarrow \iota$ be given. Let $k4_xxreal_3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_xcmplx_0 : \iota \Rightarrow o$ be given. Let $k3_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_xcmplx_0 : \iota \Rightarrow \iota$ be given. Let $k6_numbers : \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $v1_xreal_0 : \iota \Rightarrow o$ be given. Let $k1_xxreal_0 : \iota$ be given. Let $k2_xxreal_0 : \iota$ be given. Let $v3_xxreal_0 : \iota \Rightarrow o$ be given. Let $v2_xxreal_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0. \forall X1. \neg(v1_xboole_0 X0) \wedge ((X0 \neq X1) \wedge (v1_xboole_0 X1)) \quad (1)$$

Assume the following.

$$\forall X0. (v1_xcmplx_0 X0) \Rightarrow (\forall X1. (v1_xcmplx_0 X1) \Rightarrow (k3_xcmplx_0 (k5_xcmplx_0 X0) (k5_xcmplx_0 X1) = k5_xcmplx_0 (k3_xcmplx_0 X0 X1))) \quad (2)$$

Assume the following.

$$k6_numbers = k1_xboole_0 \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. ((v1_xreal_0 X0) \wedge (v1_xcmplx_0 X1)) \Rightarrow ((X0 = X1) \Rightarrow (k5_xxreal_3 X0 = k5_xcmplx_0 X1)) \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. ((v1_xreal_0 X0) \wedge ((v1_xreal_0 X1) \wedge ((v1_xcmplx_0 X2) \wedge (v1_xcmplx_0 X3)))) \Rightarrow (((X0 = X2) \wedge (X1 = X3)) \Rightarrow (k4_xxreal_3 X0 X1 = k3_xcmplx_0 X2 X3)) \quad (5)$$

Assume the following.

$$(v1_xboole_0 (k5_xxreal_3 k1_xxreal_0)) \wedge (v1_xreal_0 (k5_xxreal_3 k1_xxreal_0)) \quad (6)$$

Assume the following.

$$(v1_xboole_0 (k5_xxreal_3 k2_xxreal_0)) \wedge (v1_xxreal_0 (k5_xxreal_3 k2_xxreal_0)) \quad (7)$$

Assume the following.

$$\forall X0. \forall X1. ((v1_xreal_0 X0) \wedge (v1_xreal_0 X1)) \Rightarrow ((v1_xxreal_0 (k4_xxreal_3 X0 X1)) \wedge (v1_xxreal_0 (k4_xxreal_3 X0 X1))) \quad (8)$$

Assume the following.

$$\forall X0. (v1_xreal_0 X0) \Rightarrow ((v1_xxreal_0 (k5_xxreal_3 X0)) \wedge (v1_xxreal_0 (k5_xxreal_3 X0))) \quad (9)$$

Assume the following.

$$\forall X0. \forall X1. (((v1_xboole_0 X0) \wedge (v1_xxreal_0 X0)) \wedge (v1_xxreal_0 X1)) \Rightarrow ((v1_xboole_0 (k4_xxreal_3 X0 X1)) \wedge (v1_xxreal_0 (k4_xxreal_3 X0 X1))) \quad (10)$$

Assume the following.

$$\forall X0. \forall X1. (((\neg v1_xboole_0 X0) \wedge (v1_xxreal_0 X0)) \wedge ((\neg v1_xboole_0 X1) \wedge (v1_xxreal_0 X1))) \Rightarrow ((\neg v1_xboole_0 (k4_xxreal_3 X0 X1)) \wedge (v1_xxreal_0 (k4_xxreal_3 X0 X1))) \quad (11)$$

Assume the following.

$$\forall X0. ((v1_xxreal_0 X0) \wedge (\neg v3_xxreal_0 X0)) \Rightarrow ((v1_xxreal_0 (k5_xxreal_3 X0)) \wedge (\neg v3_xxreal_0 (k5_xxreal_3 X0))) \quad (12)$$

Assume the following.

$$\forall X0. ((v1_xxreal_0 X0) \wedge (\neg v2_xxreal_0 X0)) \Rightarrow ((v1_xxreal_0 (k5_xxreal_3 X0)) \wedge (\neg v2_xxreal_0 (k5_xxreal_3 X0))) \quad (13)$$

Assume the following.

$$\forall X0. \forall X1. (((v1_xxreal_0 X0) \wedge (\neg v2_xxreal_0 X0)) \wedge ((v1_xxreal_0 X1) \wedge (\neg v2_xxreal_0 X1))) \Rightarrow ((v1_xxreal_0 (k4_xxreal_3 X0 X1)) \wedge (\neg v3_xxreal_0 (k4_xxreal_3 X0 X1))) \quad (14)$$

Assume the following.

$$\forall X0. \forall X1. (((v1_xxreal_0 X0) \wedge (\neg v2_xxreal_0 X0)) \wedge ((v1_xxreal_0 X1) \wedge (\neg v3_xxreal_0 X1))) \Rightarrow ((v1_xxreal_0 (k4_xxreal_3 X0 X1)) \wedge (\neg v2_xxreal_0 (k4_xxreal_3 X0 X1))) \quad (15)$$

Assume the following.

$$v1_xboole_0 \ k1_xboole_0 \tag{16}$$

Assume the following.

$$\forall X0.(v1_xxreal_0 \ X0) \Rightarrow (v1_xxreal_0 \ (k5_xxreal_3 \ X0)) \tag{17}$$

Assume the following.

$$\forall X0.\forall X1.((v1_xxreal_0 \ X0) \wedge (v1_xxreal_0 \ X1)) \Rightarrow (v1_xxreal_0 \ (k4_xxreal_3 \ X0 \ X1)) \tag{18}$$

Assume the following.

$$\begin{aligned} \forall X0.(v1_xxreal_0 \ X0) \Rightarrow (\forall X1.(v1_xxreal_0 \ X1) \Rightarrow ((\\ (v1_xxreal_0 \ X0) \Rightarrow ((X1 = k5_xxreal_3 \ X0) \Leftrightarrow (\exists X2.(v1_xcmplx_0 \\ X2) \wedge ((X0 = X2) \wedge (X1 = k5_xcmplx_0 \ X2)))))) \wedge ((\neg v1_xreal_0 \ X0) \Rightarrow ((\\ X1 = k5_xxreal_3 \ X0) \Leftrightarrow (X1 = k6_numbers)))))) \end{aligned} \tag{19}$$

Assume the following.

$$\begin{aligned} \forall X0.(v1_xxreal_0 \ X0) \Rightarrow (\forall X1.(v1_xxreal_0 \ X1) \Rightarrow (\forall X2. \\ (v1_xxreal_0 \ X2) \Rightarrow (((v1_xreal_0 \ X0) \wedge (v1_xreal_0 \ X1)) \Rightarrow ((X2 = \\ k4_xxreal_3 \ X0 \ X1) \Leftrightarrow (\exists X3.(v1_xcmplx_0 \ X3) \wedge (\exists X4. \\ (v1_xcmplx_0 \ X4) \wedge ((X0 = X3) \wedge ((X1 = X4) \wedge (X2 = k3_xcmplx_0 \ X3 \ X4)))))) \wedge \\ ((\neg(\neg(v1_xreal_0 \ X0) \wedge (v1_xreal_0 \ X1)) \wedge (((v2_xxreal_0 \ X0) \wedge \\ (v2_xxreal_0 \ X1)) \vee ((v3_xxreal_0 \ X0) \wedge (v3_xxreal_0 \ X1))) \wedge (\neg \\ X2 = k4_xxreal_3 \ X0 \ X1) \Leftrightarrow (X2 = k1_xxreal_0)))) \wedge ((\neg(\neg(v1_xreal_0 \\ X0) \wedge (v1_xreal_0 \ X1)) \wedge (((v2_xxreal_0 \ X0) \wedge (v3_xxreal_0 \ X1)) \vee \\ ((v3_xxreal_0 \ X0) \wedge (v2_xxreal_0 \ X1))) \wedge (\neg(X2 = k4_xxreal_3 \ X0 \ X1) \Leftrightarrow \\ (X2 = k2_xxreal_0)))) \wedge (\neg(\neg(v1_xreal_0 \ X0) \wedge (v1_xreal_0 \ X1)) \wedge \\ ((\neg(\neg(v1_xreal_0 \ X0) \wedge (v1_xreal_0 \ X1)) \wedge (((v2_xxreal_0 \ X0) \wedge \\ v2_xxreal_0 \ X1)) \vee ((v3_xxreal_0 \ X0) \wedge (v3_xxreal_0 \ X1)))) \wedge (\neg \\ (\neg(v1_xreal_0 \ X0) \wedge (v1_xreal_0 \ X1)) \wedge (((v2_xxreal_0 \ X0) \wedge (v3_xxreal_0 \\ X1)) \vee ((v3_xxreal_0 \ X0) \wedge (v2_xxreal_0 \ X1)))) \wedge (\neg(X2 = k4_xxreal_3 \\ X0 \ X1) \Leftrightarrow (X2 = k6_numbers))))))))) \end{aligned} \tag{20}$$

Assume the following.

$$\forall X0.\forall X1.((v1_xxreal_0 \ X0) \wedge (v1_xxreal_0 \ X1)) \Rightarrow (k4_xxreal_3 \ X0 \ X1 = k4_xxreal_3 \ X1 \ X0) \tag{21}$$

Theorem 1

$$\begin{aligned} \forall X0.(v1_xxreal_0 \ X0) \Rightarrow (\forall X1.(v1_xxreal_0 \ X1) \Rightarrow (k5_xxreal_3 \\ (k4_xxreal_3 \ X0 \ X1) = k4_xxreal_3 \ (k5_xxreal_3 \ X0) \ (k5_xxreal_3 \\ X1))) \end{aligned}$$