

l56_sin_cos2 (TMR-
BGe7pb7QWqBVLnvwVw8dSs8QFUVPH7kj)

October 27, 2020

Let $v1_xreal_0 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_numbers : \iota$ be given. Let $r2_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k31_binop_2 : \iota$ be given. Let $r1_fdiff_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k26_valued_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_valued_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k24_sin_cos : \iota$ be given. Let $k1_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10_real_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_1 : \iota$ be given. Let $np_2 : \iota$ be given. Let $k1_fdiff_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_real_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_xxreal_0 : \iota \Rightarrow o$ be given. Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_numbers : \iota$ be given. Let $k47_valued_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_real_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_seq_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_binop_2 : \iota \Rightarrow \iota$ be given. Let $k9_real_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v3_membered : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

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

Assume the following.

$$\begin{aligned} & \forall X0. (m1_subset_1 X0 k1_numbers) \Rightarrow (\forall X1. (m1_subset_1 \\ & X1 k1_numbers) \Rightarrow (\forall X2. ((v1_funct_1 X2) \wedge (m1_subset_1 X2 \\ & (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers)))) \Rightarrow ((r1_fdiff_1 \\ & X2 X0) \Rightarrow ((r1_fdiff_1 (k26_valued_1 k1_numbers k1_numbers X2 X1) \\ & X0) \wedge (k1_fdiff_1 (k26_valued_1 k1_numbers k1_numbers X2 X1) X0 = \\ & k8_real_1 X1 (k1_fdiff_1 X2 X0)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & ((v2_xxreal_0 np_2) \wedge (m2_subset_1 np_2 k1_numbers k5_numbers)) \wedge \\ & ((m1_subset_1 np_2 k5_numbers) \wedge (m1_subset_1 np_2 k1_numbers)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & ((v2_xxreal_0 np_1) \wedge (m2_subset_1 np_1 k1_numbers k5_numbers)) \wedge \\ & ((m1_subset_1 np_1 k5_numbers) \wedge (m1_subset_1 np_1 k1_numbers)) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))\wedge(m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1))))\Rightarrow((r2_relset_1 X0 X1 X2 X3)\Leftrightarrow(X2 = X3)) \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.(v1_xreal_0 X0)\Rightarrow(\forall X1.((v1_funct_1 X1)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers))))\Rightarrow((r2_relset_1 k1_numbers k1_numbers X1 k31_binop_2)\Rightarrow((r1_fdiff_1 (k47_valued_1 k1_numbers k1_numbers k1_numbers k24_sin_cos (k1_partfun1 k1_numbers k1_numbers k1_numbers X1 k24_sin_cos)) X0)\wedge((r1_fdiff_1 (k3_valued_1 k1_numbers k1_numbers k1_numbers k24_sin_cos (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers X1 k24_sin_cos)) X0)\wedge((k1_fdiff_1 (k47_valued_1 k1_numbers k1_numbers k1_numbers k24_sin_cos (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers X1 k24_sin_cos) (k7_binop_2 X0))\wedge(k1_fdiff_1 (k3_valued_1 k1_numbers k1_numbers k1_numbers k24_sin_cos (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers X1 k24_sin_cos)) X0 = k7_real_1 (k1_seq_1 k24_sin_cos X0) (k1_seq_1 k24_sin_cos (k7_binop_2 X0))\wedge(k1_fdiff_1 (k3_valued_1 k1_numbers k1_numbers k1_numbers k24_sin_cos (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers X1 k24_sin_cos)) X0 = k9_real_1 (k1_seq_1 k24_sin_cos X0) (k1_seq_1 k24_sin_cos (k7_binop_2 X0)))))))))) \quad (6) \end{aligned}$$

Assume the following.

$$v3_membered k1_numbers \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((v3_membered X1)\wedge((v3_membered X2)\wedge(((v1_funct_1 X3)\wedge(m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1))))\wedge((v1_funct_1 X4)\wedge(m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 X0 X2))))))\Rightarrow((v1_funct_1 (k3_valued_1 X0 X1 X2 X3 X4)\wedge(m1_subset_1 (k3_valued_1 X0 X1 X2 X3 X4) (k1_zfmisc_1 (k2_zfmisc_1 X0 k1_numbers)))))) \quad (8) \end{aligned}$$

Assume the following.

$$(v1_funct_1 k31_binop_2)\wedge((v1_funct_2 k31_binop_2 k1_numbers k1_numbers)\wedge(m1_subset_1 k31_binop_2 (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers)))) \quad (9)$$

Assume the following.

$$(v1_funct_1 k24_sin_cos)\wedge((v1_funct_2 k24_sin_cos k1_numbers k1_numbers)\wedge(m1_subset_1 k24_sin_cos (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers)))) \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\ & (((v1_funct_1 X4)\wedge(m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X0 X1))))\wedge((v1_funct_1 X5)\wedge(m1_subset_1 X5 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X2 X3))))\Rightarrow((v1_funct_1 (k1_partfun1 X0 X1 X2 X3 X4 X5))\wedge(m1_subset_1 \\ & (k1_partfun1 X0 X1 X2 X3 X4 X5) (k1_zfmisc_1 (k2_zfmisc_1 X0 X3)))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1 X0 k1_numbers)\wedge(v1_xreal_0 X1))\Rightarrow(m1_subset_1 (k10_real_1 X0 X1) k1_numbers) \quad (12)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0)\Leftrightarrow(X0 \in k1_numbers) \quad (13)$$

Assume the following.

$$\forall X0.(m1_subset_1 X0 k1_numbers)\Rightarrow(v1_xreal_0 X0) \quad (14)$$

Theorem 1

$$\begin{aligned} & \forall X0.(v1_xreal_0 X0)\Rightarrow(\forall X1.((v1_funct_1 X1)\wedge(m1_subset_1 \\ & X1 (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers))))\Rightarrow((r2_relset_1 \\ & k1_numbers k1_numbers X1 k31_binop_2)\Rightarrow((r1_fdiff_1 (k26_valued_1 \\ & k1_numbers k1_numbers (k3_valued_1 k1_numbers k1_numbers k1_numbers \\ & k24_sin_cos (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers \\ & X1 k24_sin_cos)) (k10_real_1 np_1 np_2)) X0)\wedge(k1_fdiff_1 (k26_valued_1 \\ & k1_numbers k1_numbers (k3_valued_1 k1_numbers k1_numbers k1_numbers \\ & k24_sin_cos (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers \\ & X1 k24_sin_cos)) (k10_real_1 np_1 np_2)) X0 = k8_real_1 (k10_real_1 \\ & np_1 np_2) (k1_fdiff_1 (k3_valued_1 k1_numbers k1_numbers k1_numbers \\ & k24_sin_cos (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers \\ & X1 k24_sin_cos)) X0)))) \end{aligned}$$