

l49_sin_cos2 (TM-
cNG2rdTbcfPrXW7hXuWLxAueyRsCFp7bi)

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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 $k1_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k24_sin_cos : \iota$ 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 $k1_real_1 : \iota \Rightarrow \iota$ be given. Let $np_1 : \iota$ be given. Let $k1_seq_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v3_valued_0 : \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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.

$$\forall X0.(v1_xreal_0 X0) \Rightarrow ((r1_fdiff_1 k24_sin_cos X0) \wedge (k1_fdiff_1 k24_sin_cos X0 = k1_seq_1 k24_sin_cos X0)) \quad (1)$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1_subset_1 X0 X1) \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1_subset_1 X0 k1_numbers) \Rightarrow (\forall X1.((v1_funct_1 X1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers)))) \Rightarrow \\ (\forall X2.((v1_funct_1 X2) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers)))) \Rightarrow \\ (((r1_fdiff_1 X1 X0) \wedge (r1_fdiff_1 X2 (k1_seq_1 X1 X0))) \Rightarrow ((r1_fdiff_1 (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers X1 X2) X0) \wedge (k1_fdiff_1 (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers X1 X2) X0 = k8_real_1 (k1_fdiff_1 X2 (k1_seq_1 X1 X0)) (k1_fdiff_1 X1 X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge (v3_valued_0 X0))) \Rightarrow (k1_seq_1 X0 X1 = k1_funct_1 X0 X1) \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.((v1_funct_1 X0) \wedge (m1_subset_1 X0 (k1_zfmisc_1 (k2_zfmisc_1 \\ k1_numbers k1_numbers)))) \Rightarrow ((r2_relset_1 k1_numbers k1_numbers \\ X0 k31_binop_2) \Rightarrow (\forall X1.(v1_xreal_0 X1) \Rightarrow ((r1_fdiff_1 X0 \\ X1) \wedge (k1_fdiff_1 X0 X1 = k1_real_1 np_1)))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge (v3_valued_0 \\ X0))) \Rightarrow (v1_xreal_0 (k1_funct_1 X0 X1)) \quad (6)$$

Assume the following.

$$v3_membered k1_numbers \quad (7)$$

Assume the following.

$$\begin{aligned} (v1_funct_1 k24_sin_cos) \wedge ((v1_funct_2 k24_sin_cos k1_numbers \\ k1_numbers) \wedge (m1_subset_1 k24_sin_cos (k1_zfmisc_1 (k2_zfmisc_1 \\ k1_numbers k1_numbers)))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((v1_funct_1 X0) \wedge (m1_subset_1 X0 (k1_zfmisc_1 \\ (k2_zfmisc_1 k1_numbers k1_numbers)))) \wedge (v1_xreal_0 X1)) \Rightarrow (m1_subset_1 \\ (k1_fdiff_1 X0 X1) k1_numbers) \end{aligned} \quad (9)$$

Assume the following.

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

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1 X0 k1_numbers) \wedge (v1_xreal_0 \\ X1)) \Rightarrow (k8_real_1 X0 X1 = k8_real_1 X1 X0) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 \\ (k2_zfmisc_1 X0 X1))) \Rightarrow (v1_relat_1 X2) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.(v3_membered X1) \Rightarrow (\forall X2.(m1_subset_1 \\ X2 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1))) \Rightarrow (v3_valued_0 X2)) \quad (13)$$

Theorem 1

$$\begin{aligned} \forall X0.(v1_xreal_0 X0) \Rightarrow (\forall X1.((v1_funct_1 X1) \wedge (m1_subset_1 \\ X1 (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers)))) \Rightarrow ((r2_relset_1 \\ k1_numbers k1_numbers X1 k31_binop_2) \Rightarrow ((r1_fdiff_1 (k1_partfun1 \\ k1_numbers k1_numbers k1_numbers k1_numbers X1 k24_sin_cos) X0) \wedge \\ (k1_fdiff_1 (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers \\ X1 k24_sin_cos) X0 = k8_real_1 (k1_real_1 np_1) (k1_seq_1 k24_sin_cos \\ (k1_seq_1 X1 X0)))))) \end{aligned}$$