

l51_sin_cos2

(TMWZhG4YmtS92bXKjLYVxAjcsqASA49E7DQ)

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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 $k47_valued_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k24_sin_cos : \iota$ be given. Let $k1_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_valued_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_fdiff_1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $v1_xcmplx_0 : \iota \Rightarrow o$ be given. Let $k3_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_xcmplx_0 : \iota \Rightarrow \iota$ be given. Let $np_1 : \iota$ 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 $k2_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_real_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_real_1 : \iota \Rightarrow \iota$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v3_valued_0 : \iota \Rightarrow o$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ 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.

$$\begin{aligned} & \forall X0.(m1_subset_1 X0 k1_numbers) \Rightarrow (\forall X1.((v1_funct_1 \\ & X1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers)))) \Rightarrow \\ & (\forall X2.((v1_funct_1 X2) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & k1_numbers k1_numbers)))) \Rightarrow (((r1_fdiff_1 X1 X0) \wedge (r1_fdiff_1 \\ & X2 X0)) \Rightarrow ((r1_fdiff_1 (k47_valued_1 k1_numbers k1_numbers k1_numbers \\ & X1 X2) X0) \wedge (k1_fdiff_1 (k47_valued_1 k1_numbers k1_numbers k1_numbers \\ & X1 X2) X0 = k9_real_1 (k1_fdiff_1 X1 X0) (k1_fdiff_1 X2 X0)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1_subset_1 X0 k1_numbers) \Rightarrow (\forall X1.((v1_funct_1 \\ & X1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers)))) \Rightarrow \\ & (\forall X2.((v1_funct_1 X2) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & k1_numbers k1_numbers)))) \Rightarrow (((r1_diff_1 X1 X0) \wedge (r1_diff_1 \\ & X2 X0)) \Rightarrow ((r1_diff_1 (k3_valued_1 k1_numbers k1_numbers k1_numbers \\ & X1 X2) X0) \wedge (k1_diff_1 (k3_valued_1 k1_numbers k1_numbers k1_numbers \\ & X1 X2) X0 = k7_real_1 (k1_diff_1 X1 X0) (k1_diff_1 X2 X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.(v1_xcmplx_0 X0) \Rightarrow (k3_xcmplx_0 X0 (k4_xcmplx_0 np_1) = k4_xcmplx_0 X0) \quad (4)$$

Assume the following.

$$\begin{aligned} & ((v2_xxreal_0 np_1) \wedge (m2_subset_1 np_1 k1_numbers k5_numbers)) \wedge \\ & ((m1_subset_1 np_1 k5_numbers) \wedge (m1_subset_1 np_1 k1_numbers)) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((v1_xcmplx_0 X0) \wedge (v1_xcmplx_0 X1)) \Rightarrow (k2_xcmplx_0 X0 (k4_xcmplx_0 X1) = k6_xcmplx_0 X0 X1) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((m1_subset_1 X2 \\ & (k1_zfmisc_1 (k2_zfmisc_1 X0 X1))) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1)))) \Rightarrow ((r2_relset_1 X0 X1 X2 X3) \Leftrightarrow (X2 = X3)) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1 X0 k1_numbers) \wedge (v1_xreal_0 X1)) \Rightarrow (k9_real_1 X0 X1 = k6_xcmplx_0 X0 X1) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1 X0 k1_numbers) \wedge (v1_xreal_0 X1)) \Rightarrow (k8_real_1 X0 X1 = k3_xcmplx_0 X0 X1) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1 X0 k1_numbers) \wedge (v1_xreal_0 X1)) \Rightarrow (k7_real_1 X0 X1 = k2_xcmplx_0 X0 X1) \quad (10)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0) \Rightarrow (k7_binop_2 X0 = k4_xcmplx_0 X0) \quad (11)$$

Assume the following.

$$\forall X0.(m1_subset_1 X0 k1_numbers) \Rightarrow (k1_real_1 X0 = k4_xcmplx_0 X0) \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.(v1_xreal_0 X0) \Rightarrow (\forall X1.((v1_funct_1 X1) \wedge (m1_subset_1 \\ X1 (k1_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers)))) \Rightarrow ((r2_relset_1 \\ k1_numbers k1_numbers X1 k31_binop_2) \Rightarrow ((r1_fdiff_1 (k1_partfun1 \\ k1_numbers k1_numbers k1_numbers k1_numbers X1 k24_sin_cos) X0) \wedge \\ (k1_fdiff_1 (k1_partfun1 k1_numbers k1_numbers k1_numbers k1_numbers \\ X1 k24_sin_cos) X0 = k8_real_1 (k1_real_1 np_1) (k1_seq_1 k24_sin_cos \\ (k1_seq_1 X1 X0)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0) \Rightarrow (k1_seq_1 k31_binop_2 X0 = k8_real_1 (k1_real_1 np_1) X0) \quad (14)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0) \Rightarrow (k7_binop_2 (k7_binop_2 X0) = X0) \quad (15)$$

Assume the following.

$$\forall X0.(v1_xcmplx_0 X0) \Rightarrow (k4_xcmplx_0 (k4_xcmplx_0 X0) = X0) \quad (16)$$

Assume the following.

$$\forall X0.(m1_subset_1 X0 k1_numbers) \Rightarrow (k1_real_1 (k1_real_1 X0) = X0) \quad (17)$$

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1 X0 k1_numbers) \wedge (v1_xreal_0 X1)) \Rightarrow (m1_subset_1 (k8_real_1 X0 X1) k1_numbers) \quad (18)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0) \Rightarrow (m1_subset_1 (k7_binop_2 X0) k1_numbers) \quad (19)$$

Assume the following.

$$\forall X0.(v1_xcmplx_0 X0) \Rightarrow (v1_xcmplx_0 (k4_xcmplx_0 X0)) \quad (20)$$

Assume the following.

$$\begin{aligned} (v1_funct_1 k31_binop_2) \wedge ((v1_funct_2 k31_binop_2 k1_numbers \\ k1_numbers) \wedge (m1_subset_1 k31_binop_2 (k1_zfmisc_1 (k2_zfmisc_1 \\ k1_numbers k1_numbers)))) \end{aligned} \quad (21)$$

Assume the following.

$$(v1_funct_1\ k24_sin_cos) \wedge ((v1_funct_2\ k24_sin_cos\ k1_numbers\ k1_numbers) \wedge (m1_subset_1\ k24_sin_cos\ (k1_zfmisc_1\ (k2_zfmisc_1\ k1_numbers\ k1_numbers)))) \quad (22)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1\ X0) \wedge ((v1_funct_1\ X0) \wedge (v3_valued_0\ X0))) \Rightarrow (m1_subset_1\ (k1_seq_1\ X0\ X1)\ k1_numbers) \quad (23)$$

Assume the following.

$$\forall X0.(m1_subset_1\ X0\ k1_numbers) \Rightarrow (m1_subset_1\ (k1_real_1\ X0)\ k1_numbers) \quad (24)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\ & (((v1_funct_1\ X4) \wedge (m1_subset_1\ X4\ (k1_zfmisc_1\ (k2_zfmisc_1\ X0\ X1)))) \wedge ((v1_funct_1\ X5) \wedge (m1_subset_1\ X5\ (k1_zfmisc_1\ (k2_zfmisc_1\ X2\ X3)))))) \Rightarrow ((v1_funct_1\ (k1_partfun1\ X0\ X1\ X2\ X3\ X4\ X5)) \wedge (m1_subset_1\ (k1_partfun1\ X0\ X1\ X2\ X3\ X4\ X5)\ (k1_zfmisc_1\ (k2_zfmisc_1\ X0\ X3)))) \quad (25) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1\ X0\ k1_numbers) \wedge (v1_xreal_0\ X1)) \Rightarrow (k8_real_1\ X0\ X1 = k8_real_1\ X1\ X0) \quad (26)$$

Assume the following.

$$\forall X0.(v1_xreal_0\ X0) \Rightarrow (v1_xcmplx_0\ X0) \quad (27)$$

Assume the following.

$$\forall X0.((v1_relat_1\ X0) \wedge (v5_relat_1\ X0\ k1_numbers)) \Rightarrow ((v1_relat_1\ X0) \wedge (v3_valued_0\ X0)) \quad (28)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1\ X0\ X1))) \Rightarrow ((v4_relat_1\ X2\ X0) \wedge (v5_relat_1\ X2\ X1)) \quad (29)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1\ X0\ X1))) \Rightarrow (v1_relat_1\ X2) \quad (30)$$

Assume the following.

$$\forall X0.(m1_subset_1\ X0\ k1_numbers) \Rightarrow (v1_xreal_0\ X0) \quad (31)$$

Theorem 1

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