

t21_dilworth (TMHJ-
maFtekuSG6GQUq5fXjVHN71HRMVhcyP)

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Let $v4_dilworth : \iota \Rightarrow o$ be given. Let $l1_orders_2 : \iota \Rightarrow o$ be given. Let $k2_dilworth : \iota \Rightarrow \iota$ be given. Let $np_1 : \iota$ be given. Let $v1_dilworth : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_struct_0 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r1_orders_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_card_1 : \iota \Rightarrow \iota$ be given. Let $k2_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_2 : \iota$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_dilworth : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7_domain_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $r1_xxreal_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_xxreal_0 : \iota \Rightarrow o$ be given. Let $v7_ordinal1 : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v1_finset_1 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.(l1_orders_2 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 \\ & (u1_struct_0 X0))) \Rightarrow (((v1_dilworth X1 X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 \\ & (u1_struct_0 X0)))) \Leftrightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\neg(X2 \in X1) \wedge \\ & ((X3 \in X1) \wedge ((X2 \neq X3) \wedge ((\neg r1_orders_2 X0 X2 X3) \wedge (\neg r1_orders_2 X0 \\ & X3 X2)))))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.(X0 \neq X1) \Rightarrow (k5_card_1 (k2_tarski X0 X1) = np_2) \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge (l1_orders_2 X0)) \Rightarrow (\forall X1. \\ & (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 \\ & (u1_struct_0 X0)) \Rightarrow (\neg(\neg r1_orders_2 X0 X1 X2) \wedge ((\neg r1_orders_2 X0 \\ & X2 X1) \wedge (\neg(v2_dilworth (k7_domain_1 (u1_struct_0 X0) X1 X2) X0) \wedge \\ & (m1_subset_1 (k7_domain_1 (u1_struct_0 X0) X1 X2) (k1_zfmisc_1 \\ & (u1_struct_0 X0)))))))))) \end{aligned} \tag{3}$$

Assume the following.

$$\neg v1_xboole_0 np_1 \tag{4}$$

Assume the following.

$$\neg r1_xxreal_0 \ np_2 \ np_1 \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 \ X0) \wedge ((m1_subset_1 \ X1 \ X0) \wedge (m1_subset_1 \ X2 \ X0))) \Rightarrow (k7_domain_1 \ X0 \ X1 \ X2 = k2_tarski \ X1 \ X2) \quad (6)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 \ X0) \wedge ((v4_dilworth \ X0) \wedge (l1_orders_2 \ X0))) \Rightarrow ((v2_xxreal_0 \ (k2_dilworth \ X0)) \wedge (v7_ordinal1 \ (k2_dilworth \ X0))) \quad (7)$$

Assume the following.

$$\forall X0. ((v2_struct_0 \ X0) \wedge (l1_orders_2 \ X0)) \Rightarrow ((v1_xboole_0 \ (k2_dilworth \ X0)) \wedge (v7_ordinal1 \ (k2_dilworth \ X0))) \quad (8)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 \ X0) \wedge (l1_struct_0 \ X0)) \Rightarrow (\neg v1_xboole_0 \ (u1_struct_0 \ X0)) \quad (9)$$

Assume the following.

$$\forall X0. (l1_orders_2 \ X0) \Rightarrow (l1_struct_0 \ X0) \quad (10)$$

Assume the following.

$$\forall X0. (l1_struct_0 \ X0) \Rightarrow (m1_subset_1 \ (k2_struct_0 \ X0) \ (k1_zfmisc_1 \ (u1_struct_0 \ X0))) \quad (11)$$

Assume the following.

$$\forall X0. ((v4_dilworth \ X0) \wedge (l1_orders_2 \ X0)) \Rightarrow (\forall X1. (v7_ordinal1 \ X1) \Rightarrow ((X1 = k2_dilworth \ X0) \Leftrightarrow ((\exists X2. ((v1_finset_1 \ X2) \wedge ((v2_dilworth \ X2 \ X0) \wedge (m1_subset_1 \ X2 \ (k1_zfmisc_1 \ (u1_struct_0 \ X0)))))) \wedge (k5_card_1 \ X2 = X1)) \wedge (\forall X2. ((v1_finset_1 \ X2) \wedge (v2_dilworth \ X2 \ X0) \wedge (m1_subset_1 \ X2 \ (k1_zfmisc_1 \ (u1_struct_0 \ X0)))))) \Rightarrow (r1_xxreal_0 \ (k5_card_1 \ X2 \ X1)))))) \quad (12)$$

Assume the following.

$$\forall X0. (l1_struct_0 \ X0) \Rightarrow (k2_struct_0 \ X0 = u1_struct_0 \ X0) \quad (13)$$

Assume the following.

$$\forall X0. ((v4_dilworth \ X0) \wedge (l1_orders_2 \ X0)) \Rightarrow (\forall X1. (m1_subset_1 \ X1 \ (k1_zfmisc_1 \ (u1_struct_0 \ X0))) \Rightarrow ((v2_dilworth \ X1 \ X0) \Rightarrow ((v1_finset_1 \ X1) \wedge (v2_dilworth \ X1 \ X0)))) \quad (14)$$

Theorem 1

$$\forall X0.((v4_dilworth\ X0)\wedge(l1_orders_2\ X0))\Rightarrow((k2_dilworth\ X0 = np_1)\Rightarrow((v1_dilworth\ (k2_struct_0\ X0)\ X0)\wedge(m1_subset_1\ (k2_struct_0\ X0)\ (k1_zfmisc_1\ (u1_struct_0\ X0)))))$$