

t19\_dilworth  
(TMG9qdWY2GveTidi7s1ZPtsGy8Xwczy3Avk)

October 27, 2020

Let  $v3\_dilworth : \iota \Rightarrow o$  be given. Let  $l1\_orders\_2 : \iota \Rightarrow o$  be given. Let  $k1\_dilworth : \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $v2\_dilworth : \iota \Rightarrow \iota \Rightarrow o$  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  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $r1\_orders\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_dilworth : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  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. Let  $v1\_zfmisc\_1 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\ & (u1\_struct\_0 X0)) \Rightarrow (((r1\_orders\_2 X0 X1 X2) \vee (r1\_orders\_2 X0 X2 \\ & X1)) \Rightarrow ((v1\_dilworth (k7\_domain\_1 (u1\_struct\_0 X0) X1 X2) X0) \wedge \\ & m1\_subset\_1 (k7\_domain\_1 (u1\_struct\_0 X0) X1 X2) (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. (X0 \neq X1) \Rightarrow (k5\_card\_1 (k2\_tarski X0 X1) = np\_2) \quad (2)$$

Assume the following.

$$\neg v1\_xboole\_0 np\_1 \quad (3)$$

Assume the following.

$$\neg r1\_xxreal\_0 np\_2 np\_1 \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X0) \wedge ((m1\_subset\_1 \\ & X1 X0) \wedge (m1\_subset\_1 X2 X0))) \Rightarrow (k7\_domain\_1 X0 X1 X2 = k2\_tarski X1 \\ & X2) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.((v2\_struct\_0 X0) \wedge (l1\_orders\_2 X0)) \Rightarrow ((v1\_xboole\_0 (k1\_dilworth X0)) \wedge (v7\_ordinal1 (k1\_dilworth X0))) \quad (6)$$

Assume the following.

$$\forall X0.(l1\_orders\_2 X0) \Rightarrow (l1\_struct\_0 X0) \quad (7)$$

Assume the following.

$$\forall X0.(l1\_struct\_0 X0) \Rightarrow (m1\_subset\_1 (k2\_struct\_0 X0) (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \quad (8)$$

Assume the following.

$$\forall X0.((v3\_dilworth X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (v7\_ordinal1 (k1\_dilworth X0)) \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v3\_dilworth X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (\forall X1. \\ & (v7\_ordinal1 X1) \Rightarrow ((X1 = k1\_dilworth X0) \Leftrightarrow ((\exists X2.((v1\_finset\_1 \\ & X2) \wedge ((v1\_dilworth X2 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \wedge (k5\_card\_1 X2 = X1)) \wedge (\forall X2.((v1\_finset\_1 X2) \wedge ( \\ & (v1\_dilworth X2 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0)))))) \Rightarrow (r1\_xreal\_0 (k5\_card\_1 X2) X1)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.(l1\_struct\_0 X0) \Rightarrow (k2\_struct\_0 X0 = u1\_struct\_0 X0) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_orders\_2 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))) \Rightarrow ((v2\_dilworth X1 X0) \Leftrightarrow (\forall X2.(m1\_subset\_1 \\ & X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\ & X0)) \Rightarrow (((X2 \in X1) \wedge (X3 \in X1)) \Rightarrow ((X2 = X3) \vee ((\neg r1\_orders\_2 X0 X2 X3) \wedge \\ & (\neg r1\_orders\_2 X0 X3 X2)))))))))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v3\_dilworth X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow ((v1\_dilworth \\ & X1 X0) \Rightarrow ((v1\_finset\_1 X1) \wedge (v1\_dilworth X1 X0)))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.(l1\_orders\_2 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow ((v1\_zfmisc\_1 X1) \Rightarrow (v2\_dilworth X1 X0))) \quad (14)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (v1\_zfmisc\_1 X0) \quad (15)$$

**Theorem 1**

$$\forall X0.((v3\_dilworth\ X0)\wedge(l1\_orders\_2\ X0))\Rightarrow((k1\_dilworth\ X0 = np\_1)\Rightarrow((v2\_dilworth\ (k2\_struct\_0\ X0)\ X0)\wedge(m1\_subset\_1\ (k2\_struct\_0\ X0)\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))))$$