

## t2\_waybel22 (TMMcMVCKdLT- TURej41us6egeegdXBzz9n5x)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v3\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v4\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v5\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v3\_lattice3 : \iota \Rightarrow o$  be given. Let  $l1\_orders\_2 : \iota \Rightarrow o$  be given. Let  $m1\_waybel16 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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  $v22\_waybel\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v17\_waybel\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge ((v5\_orders\_2 \\
& X0) \wedge (l1\_orders\_2 X0)))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v3\_orders\_2 \\
& X1) \wedge ((v5\_orders\_2 X1) \wedge (l1\_orders\_2 X1)))) \Rightarrow (\forall X2.((\neg v2\_struct\_0 \\
& X2) \wedge ((v3\_orders\_2 X2) \wedge ((v5\_orders\_2 X2) \wedge (l1\_orders\_2 X2)))) \Rightarrow \\
& (\forall X3.((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 (u1\_struct\_0 X0) \\
& (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (\forall X4.((v1\_funct\_1 \\
& X4) \wedge ((v1\_funct\_2 X4 (u1\_struct\_0 X1) (u1\_struct\_0 X2)) \wedge (m1\_subset\_1 \\
& X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2)))))) \Rightarrow \\
& (((v22\_waybel\_0 X3 X0 X1) \wedge (v22\_waybel\_0 X4 X1 X2)) \Rightarrow (v22\_waybel\_0 \\
& (k1\_partfun1 (u1\_struct\_0 X0) (u1\_struct\_0 X1) (u1\_struct\_0 X1) \\
& (u1\_struct\_0 X2) X3 X4) X0 X2))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2\_struct\_0 X1) \wedge (l1\_orders\_2 X1)) \Rightarrow (\forall X2.((\neg v2\_struct\_0 \\
& X2) \wedge (l1\_orders\_2 X2)) \Rightarrow (\forall X3.((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 \\
& X3 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (\forall X4. \\
& ((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 (u1\_struct\_0 X1) (u1\_struct\_0 \\
& X2)) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X1) (u1\_struct\_0 X2)))))) \Rightarrow (((v17\_waybel\_0 X3 X0 X1) \wedge (v17\_waybel\_0 \\
& X4 X1 X2)) \Rightarrow (v17\_waybel\_0 (k1\_partfun1 (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X1) (u1\_struct\_0 X1) (u1\_struct\_0 X2) X3 X4) X0 X2))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& (((v1\_funct\_1 X4) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 X1)))) \wedge ((v1\_funct\_1 X5) \wedge (m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X2 X3)))))) \Rightarrow (k1\_partfun1 X0 X1 X2 X3 X4 X5 = k3\_relat\_1 X4 X5)
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. ((\neg v1\_xboole\_0 \\
& X1) \wedge (((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 X3 \\
& (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \wedge ((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 \\
& X4 X1 X2) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X1 X2)))))) \Rightarrow \\
& ((v1\_funct\_1 (k3\_relat\_1 X3 X4)) \wedge (v1\_funct\_2 (k3\_relat\_1 X3 X4) \\
& X0 X2))
\end{aligned} \tag{4}$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge \\
& ((v4\_orders\_2 X0) \wedge ((v5\_orders\_2 X0) \wedge ((v3\_lattice3 X0) \wedge (l1\_orders\_2 \\
& X0)))))) \wedge ((\neg v2\_struct\_0 X1) \wedge ((v3\_orders\_2 X1) \wedge ((v4\_orders\_2 \\
& X1) \wedge ((v5\_orders\_2 X1) \wedge ((v3\_lattice3 X1) \wedge (l1\_orders\_2 X1)))))) \Rightarrow \\
& (\forall X2. (m1\_waybel16 X2 X0 X1) \Rightarrow ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\
& X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\forall X0. (l1\_orders\_2 X0) \Rightarrow (l1\_struct\_0 X0) \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& (((v1\_funct\_1 X4) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 X1)))) \wedge ((v1\_funct\_1 X5) \wedge (m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X2 X3)))) \Rightarrow ((v1\_funct\_1 (k1\_partfun1 X0 X1 X2 X3 X4 X5)) \wedge (m1\_subset\_1 \\
& (k1\_partfun1 X0 X1 X2 X3 X4 X5) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X3))))
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge ((v4\_orders\_2 \\
& X0) \wedge ((v5\_orders\_2 X0) \wedge ((v3\_lattice3 X0) \wedge (l1\_orders\_2 X0)))))) \Rightarrow \\
& (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v3\_orders\_2 X1) \wedge ((v4\_orders\_2 \\
& X1) \wedge ((v5\_orders\_2 X1) \wedge ((v3\_lattice3 X1) \wedge (l1\_orders\_2 X1)))))) \Rightarrow \\
& (\forall X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) \\
& (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow ((m1\_waybel16 X2 X0 X1) \Leftrightarrow \\
& ((v22\_waybel\_0 X2 X0 X1) \wedge (v17\_waybel\_0 X2 X0 X1))))
\end{aligned} \tag{9}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge ((v4\_orders\_2 \\
& X0) \wedge ((v5\_orders\_2 X0) \wedge ((v3\_lattice3 X0) \wedge (l1\_orders\_2 X0)))))) \Rightarrow \\
& (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v3\_orders\_2 X1) \wedge ((v4\_orders\_2 \\
& X1) \wedge ((v5\_orders\_2 X1) \wedge ((v3\_lattice3 X1) \wedge (l1\_orders\_2 X1)))))) \Rightarrow \\
& (\forall X2. ((\neg v2\_struct\_0 X2) \wedge ((v3\_orders\_2 X2) \wedge ((v4\_orders\_2 \\
& X2) \wedge ((v5\_orders\_2 X2) \wedge ((v3\_lattice3 X2) \wedge (l1\_orders\_2 X2)))))) \Rightarrow \\
& (\forall X3. (m1\_waybel16 X3 X0 X1) \Rightarrow (\forall X4. (m1\_waybel16 X4 \\
& X1 X2) \Rightarrow (m1\_waybel16 (k1\_partfun1 (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X1) (u1\_struct\_0 X1) (u1\_struct\_0 X2) X3 X4) X0 X2))))
\end{aligned}$$