

t23_waybel_5 (TMYvEAfr-
cAeokzXYHM1UoQW9HMQWYSji7oz)

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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 $v1_lattice3 : \iota \Rightarrow o$ be given. Let $v2_lattice3 : \iota \Rightarrow o$ be given. Let $v3_lattice3 : \iota \Rightarrow o$ be given. Let $l1_orders_2 : \iota \Rightarrow o$ be given. Let $v3_waybel_3 : \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ 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 $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v2_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_finsub_1 : \iota \Rightarrow \iota$ be given. Let $m2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_waybel_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_yellow_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_waybel_5 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_waybel_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_yellow_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the fol-

lowing.

$$\begin{aligned}
& \forall X0.((v3_orders_2 X0) \wedge ((v4_orders_2 X0) \wedge ((v5_orders_2 \\
& X0) \wedge ((v1_lattice3 X0) \wedge ((v2_lattice3 X0) \wedge ((v3_lattice3 X0) \wedge \\
& (l1_orders_2 X0)))))) \Rightarrow ((\forall X1.(\neg v1_xboole_0 X1) \Rightarrow (\forall X2. \\
& (\neg v1_xboole_0 X2) \Rightarrow (\forall X3.((v1_funct_1 X3) \wedge ((v1_funct_2 \\
& X3 (k2_zfmisc_1 X1 X2) (u1_struct_0 X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (k2_zfmisc_1 X1 X2) (u1_struct_0 X0)))))) \Rightarrow (\forall X4. \\
& (m1_subset_1 X4 (k1_zfmisc_1 (u1_struct_0 X0))) \Rightarrow ((X4 = ReplSep \\
& (toset (\lambda X5 : \iota.m1_subset_1 X5 (u1_struct_0 X0))) (\lambda X5 : \\
& \iota.\exists X6.((v1_relat_1 X6) \wedge ((v2_relat_1 X6) \wedge ((v4_relat_1 \\
& X6 X1) \wedge ((v1_funct_1 X6) \wedge (v1_partfun1 X6 X1)))))) \wedge ((X6 \in k1_funct_2 \\
& X1 (k5_finsub_1 X2)) \wedge (\exists X7.(m2_pboole X7 X1 X6 (k7_funcop_1 \\
& X1 (u1_struct_0 X0))) \wedge ((\forall X8.(m1_subset_1 X8 X1) \Rightarrow (\forall X9. \\
& (X9 \in k1_funct_1 X6 X8) \Rightarrow (k1_funct_1 (k1_waybel_5 X1 (u1_struct_0 \\
& X0) X6 X7 X8) X9 = k1_binop_1 X3 X8 X9))) \wedge (X5 = k5_yellow_2 X0 (k4_waybel_5 \\
& X0 X7)))))) (\lambda X5 : \iota.X5) \Rightarrow (k5_yellow_2 X0 (k4_waybel_5 X0 \\
& (k6_waybel_5 X1 X2 (u1_struct_0 X0) X3)) = k1_yellow_0 X0 X4)))))) \Rightarrow \\
& (v3_waybel_3 X0))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v3_orders_2 X0) \wedge ((v4_orders_2 X0) \wedge ((v5_orders_2 \\
& X0) \wedge ((v1_lattice3 X0) \wedge ((v2_lattice3 X0) \wedge ((v3_lattice3 X0) \wedge \\
& (l1_orders_2 X0)))))) \Rightarrow ((v3_waybel_3 X0) \Rightarrow (\forall X1.(\neg v1_xboole_0 \\
& X1) \Rightarrow (\forall X2.(\neg v1_xboole_0 X2) \Rightarrow (\forall X3.((v1_funct_1 \\
& X3) \wedge ((v1_funct_2 X3 (k2_zfmisc_1 X1 X2) (u1_struct_0 X0)) \wedge (m1_subset_1 \\
& X3 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X1 X2) (u1_struct_0 \\
& X0)))))) \Rightarrow (\forall X4.(m1_subset_1 X4 (k1_zfmisc_1 (u1_struct_0 \\
& X0))) \Rightarrow ((X4 = ReplSep (toset (\lambda X5 : \iota.m1_subset_1 X5 (u1_struct_0 \\
& X0))) (\lambda X5 : \iota.\exists X6.((v1_relat_1 X6) \wedge ((v2_relat_1 \\
& X6) \wedge ((v4_relat_1 X6 X1) \wedge ((v1_funct_1 X6) \wedge (v1_partfun1 X6 X1)))))) \wedge \\
& ((X6 \in k1_funct_2 X1 (k5_finsub_1 X2)) \wedge (\exists X7.(m2_pboole \\
& X7 X1 X6 (k7_funcop_1 X1 (u1_struct_0 X0))) \wedge ((\forall X8.(m1_subset_1 \\
& X8 X1) \Rightarrow (\forall X9.(X9 \in k1_funct_1 X6 X8) \Rightarrow (k1_funct_1 (k1_waybel_5 \\
& X1 (u1_struct_0 X0) X6 X7 X8) X9 = k1_binop_1 X3 X8 X9))) \wedge (X5 = k5_yellow_2 \\
& X0 (k4_waybel_5 X0 X7)))))) (\lambda X5 : \iota.X5) \Rightarrow (k5_yellow_2 X0 \\
& (k4_waybel_5 X0 (k6_waybel_5 X1 X2 (u1_struct_0 X0) X3)) = k1_yellow_0 \\
& X0 X4))))))
\end{aligned} \tag{2}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((v3_orders_2 X0) \wedge ((v4_orders_2 X0) \wedge ((v5_orders_2 \\
& X0) \wedge ((v1_lattice3 X0) \wedge ((v2_lattice3 X0) \wedge ((v3_lattice3 X0) \wedge \\
& (l1_orders_2 X0)))))) \Rightarrow ((v3_waybel_3 X0) \Leftrightarrow (\forall X1. (\neg v1_xboole_0 \\
& X1) \Rightarrow (\forall X2. (\neg v1_xboole_0 X2) \Rightarrow (\forall X3. ((v1_funct_1 \\
& X3) \wedge ((v1_funct_2 X3 (k2_zfmisc_1 X1 X2) (u1_struct_0 X0)) \wedge (m1_subset_1 \\
& X3 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X1 X2) (u1_struct_0 \\
& X0)))))) \Rightarrow (\forall X4. (m1_subset_1 X4 (k1_zfmisc_1 (u1_struct_0 \\
& X0))) \Rightarrow ((X4 = ReplSep (toset (\lambda X5 : \iota. m1_subset_1 X5 (u1_struct_0 \\
& X0))) (\lambda X5 : \iota. \exists X6. ((v1_relat_1 X6) \wedge ((v2_relat_1 \\
& X6) \wedge ((v4_relat_1 X6 X1) \wedge ((v1_funct_1 X6) \wedge (v1_partfun1 X6 X1)))))) \wedge \\
& ((X6 \in k1_funct_2 X1 (k5_finsub_1 X2)) \wedge (\exists X7. (m2_pboole \\
& X7 X1 X6 (k7_funcop_1 X1 (u1_struct_0 X0))) \wedge ((\forall X8. (m1_subset_1 \\
& X8 X1) \Rightarrow (\forall X9. (X9 \in k1_funct_1 X6 X8) \Rightarrow (k1_funct_1 (k1_waybel_5 \\
& X1 (u1_struct_0 X0) X6 X7 X8) X9 = k1_binop_1 X3 X8 X9))) \wedge (X5 = k5_yellow_2 \\
& X0 (k4_waybel_5 X0 X7)))))) (\lambda X5 : \iota. X5) \Rightarrow (k5_yellow_2 X0 \\
& (k4_waybel_5 X0 (k6_waybel_5 X1 X2 (u1_struct_0 X0) X3)) = k1_yellow_0 \\
& X0 X4))))))
\end{aligned}$$