

# l130\_toprealb

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Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $k2\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k1\_fcont\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_real\_1 : \iota \Rightarrow \iota$  be given. Let  $k10\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k8\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_2 : \iota$  be given. Let  $k32\_sin\_cos : \iota$  be given. Let  $k5\_toprealb : \iota \Rightarrow \iota$  be given. Let  $c45\_toprealb : \iota$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_topalg\_2 : \iota$  be given. Let  $k2\_rcomp\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $c5\_toprealb : \iota$  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  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xcmplx\_0 : \iota \Rightarrow o$  be given. Let  $k3\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $k10\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  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  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $k2\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k31\_sin\_cos : \iota$  be given. Let  $k3\_topmetr : \iota$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_fcont\_1 : \iota \Rightarrow o$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 (k1\_zfmisc\_1 X1)) \Leftrightarrow (r1\_tarski X0 X1) \quad (1)$$

Assume the following.

$$\forall X0. (v1\_xcmplx\_0 X0) \Rightarrow (k3\_xcmplx\_0 np\_1 X0 = X0) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow ((r1\_tarski (k10\_xtuple\_0 X1) X0) \Rightarrow ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k9\_xtuple\_0 X1) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k9\_xtuple\_0 X1) X0)))))) \quad (3)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_2) \wedge (m2\_subset\_1 \ np\_2 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_2 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_2 \ k1\_numbers)) \end{aligned} \quad (4)$$

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.

$$\begin{aligned} & \forall X0. \forall X1. ((m1\_subset\_1 \ X0 \ k1\_numbers) \wedge (v1\_xreal\_0 \\ & \ X1)) \Rightarrow (k8\_real\_1 \ X0 \ X1 = k3\_xcmplx\_0 \ X0 \ X1) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((m1\_subset\_1 \ X0 \ k1\_numbers) \wedge (v1\_xreal\_0 \\ & \ X1)) \Rightarrow (k7\_real\_1 \ X0 \ X1 = k2\_xcmplx\_0 \ X0 \ X1) \end{aligned} \quad (7)$$

Assume the following.

$$k32\_sin\_cos = k31\_sin\_cos \quad (8)$$

Assume the following.

$$k2\_topalg\_2 = k3\_topmetr \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 \ X1) \wedge (v5\_relat\_1 \ X1 \ X0)) \Rightarrow ( \\ & \ k2\_relset\_1 \ X0 \ X1 = k10\_xtuple\_0 \ X1) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((v1\_funct\_1 \ X2) \wedge \\ & (m1\_subset\_1 \ X2 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ X0 \ X1)))) \Rightarrow (k2\_partfun1 \\ & \ X0 \ X1 \ X2 \ X3 = k5\_relat\_1 \ X2 \ X3) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 \ X1) \wedge (v4\_relat\_1 \ X1 \ X0)) \Rightarrow ( \\ & \ k1\_relset\_1 \ X0 \ X1 = k9\_xtuple\_0 \ X1) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & r1\_tarSKI \ (k2\_relset\_1 \ k1\_numbers \ (k2\_partfun1 \ k1\_numbers \ k1\_numbers \\ & \ (k1\_fcont\_1 \ (k1\_real\_1 \ (k10\_real\_1 \ np\_1 \ (k8\_real\_1 \ np\_2 \ k32\_sin\_cos))) \\ & \ np\_1) \ (k5\_toprealb \ c45\_toprealb))) \ (k2\_rcomp\_1 \ (k10\_real\_1 \\ & \ np\_1 \ np\_2) \ (k7\_real\_1 \ (k10\_real\_1 \ np\_1 \ np\_2) \ c5\_toprealb)) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned}
& k1\_reset\_1 \ k1\_numbers \ (k2\_partfun1 \ k1\_numbers \ k1\_numbers \ (k1\_fcont\_1 \\
& \quad (k1\_real\_1 \ (k10\_real\_1 \ np\_1 \ (k8\_real\_1 \ np\_2 \ k32\_sin\_cos)))) \\
& \quad np\_1) \ (k5\_toprealb \ c45\_toprealb) = k5\_toprealb \ c45\_toprealb
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& u1\_struct\_0 \ (k1\_pre\_topc \ k2\_topalg\_2 \ (k5\_toprealb \ (k2\_rcomp\_1 \\
& \quad (k10\_real\_1 \ np\_1 \ np\_2) \ (k7\_real\_1 \ (k10\_real\_1 \ np\_1 \ np\_2) \ c5\_toprealb)))) = \\
& \quad k5\_toprealb \ (k2\_rcomp\_1 \ (k10\_real\_1 \ np\_1 \ np\_2) \ (k7\_real\_1 \ ( \\
& \quad \quad k10\_real\_1 \ np\_1 \ np\_2) \ c5\_toprealb))
\end{aligned} \tag{15}$$

Assume the following.

$$\begin{aligned}
& u1\_struct\_0 \ (k1\_pre\_topc \ k2\_topalg\_2 \ (k5\_toprealb \ c45\_toprealb)) = \\
& \quad k5\_toprealb \ c45\_toprealb
\end{aligned} \tag{16}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_xreal\_0 \ X0) \wedge (v1\_xreal\_0 \ X1)) \Rightarrow (v1\_xreal\_0 \\
& \quad (k2\_xcmplx\_0 \ X0 \ X1))
\end{aligned} \tag{17}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_xreal\_0 \ X0) \wedge (v1\_xreal\_0 \ X1)) \Rightarrow ((v1\_funct\_1 \\
& \quad (k1\_fcont\_1 \ X0 \ X1)) \wedge ((v1\_funct\_2 \ (k1\_fcont\_1 \ X0 \ X1) \ k1\_numbers \\
& \quad \quad k1\_numbers) \wedge (v1\_fcont\_1 \ (k1\_fcont\_1 \ X0 \ X1))))
\end{aligned} \tag{18}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((m1\_subset\_1 \ X0 \ k1\_numbers) \wedge (v1\_xreal\_0 \\
& \quad X1)) \Rightarrow (m1\_subset\_1 \ (k8\_real\_1 \ X0 \ X1) \ k1\_numbers)
\end{aligned} \tag{19}$$

Assume the following.

$$m1\_subset\_1 \ k32\_sin\_cos \ k1\_numbers \tag{20}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_xxreal\_0 \ X0) \wedge (v1\_xxreal\_0 \ X1)) \Rightarrow ( \\
& \quad m1\_subset\_1 \ (k2\_rcomp\_1 \ X0 \ X1) \ (k1\_zfmisc\_1 \ k1\_numbers))
\end{aligned} \tag{21}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. ((v1\_funct\_1 \ X2) \wedge \\
& \quad (m1\_subset\_1 \ X2 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ X0 \ X1)))) \Rightarrow ((v1\_funct\_1 \\
& \quad (k2\_partfun1 \ X0 \ X1 \ X2 \ X3)) \wedge (m1\_subset\_1 \ (k2\_partfun1 \ X0 \ X1 \ X2 \ X3) \\
& \quad \quad (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ X0 \ X1))))
\end{aligned} \tag{22}$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (m1\_subset\_1 (k1\_real\_1 X0) k1\_numbers) \quad (23)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_xreal\_0 X0) \wedge (v1\_xreal\_0 X1)) \Rightarrow ((v1\_funct\_1 (k1\_fcont\_1 X0 X1)) \wedge ((v1\_funct\_2 (k1\_fcont\_1 X0 X1) k1\_numbers k1\_numbers) \wedge (m1\_subset\_1 (k1\_fcont\_1 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers k1\_numbers)))))) \quad (24)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 k1\_numbers) \wedge (v1\_xreal\_0 X1)) \Rightarrow (m1\_subset\_1 (k10\_real\_1 X0 X1) k1\_numbers) \quad (25)$$

Assume the following.

$$(v1\_xreal\_0 c5\_toprealb) \wedge (v2\_xxreal\_0 c5\_toprealb) \quad (26)$$

Assume the following.

$$(\neg v1\_xboole\_0 c45\_toprealb) \wedge (m1\_subset\_1 c45\_toprealb (k1\_zfmisc\_1 k1\_numbers)) \quad (27)$$

Assume the following.

$$c5\_toprealb = np\_1 \quad (28)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 (k1\_zfmisc\_1 k1\_numbers)) \Rightarrow (k5\_toprealb X0 = X0) \quad (29)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_xcmplx\_0 X0) \wedge (v1\_xcmplx\_0 X1)) \Rightarrow (k3\_xcmplx\_0 X0 X1 = k3\_xcmplx\_0 X1 X0) \quad (30)$$

Assume the following.

$$\forall X0.(v1\_xreal\_0 X0) \Rightarrow (v1\_xxreal\_0 X0) \quad (31)$$

Assume the following.

$$\forall X0.(v1\_xreal\_0 X0) \Rightarrow (v1\_xcmplx\_0 X0) \quad (32)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))) \Rightarrow ((v4\_relat\_1 X2 X0) \wedge (v5\_relat\_1 X2 X1)) \quad (33)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k1\_numbers)\Rightarrow(v1\_xreal\_0 X0) \quad (34)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k1\_numbers)\Rightarrow(v1\_xcmplx\_0 X0) \quad (35)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))\Rightarrow(v1\_relat\_1 X2) \quad (36)$$

**Theorem 1**

$$\begin{aligned} & (v1\_funct\_1 (k2\_partfun1 k1\_numbers k1\_numbers (k1\_fcont\_1 ( \\ & k1\_real\_1 (k10\_real\_1 np\_1 (k8\_real\_1 np\_2 k32\_sin\_cos))) np\_1) \\ & (k5\_toprealb c45\_toprealb)))\wedge((v1\_funct\_2 (k2\_partfun1 k1\_numbers \\ & k1\_numbers (k1\_fcont\_1 (k1\_real\_1 (k10\_real\_1 np\_1 (k8\_real\_1 \\ & np\_2 k32\_sin\_cos))) np\_1) (k5\_toprealb c45\_toprealb)) (u1\_struct\_0 \\ & (k1\_pre\_topc k2\_topalg\_2 (k5\_toprealb c45\_toprealb))) (u1\_struct\_0 \\ & (k1\_pre\_topc k2\_topalg\_2 (k5\_toprealb (k2\_rcomp\_1 (k10\_real\_1 \\ & np\_1 np\_2) (k7\_real\_1 (k10\_real\_1 np\_1 np\_2) c5\_toprealb))))))\wedge \\ & (m1\_subset\_1 (k2\_partfun1 k1\_numbers k1\_numbers (k1\_fcont\_1 \\ & (k1\_real\_1 (k10\_real\_1 np\_1 (k8\_real\_1 np\_2 k32\_sin\_cos))) \\ & np\_1) (k5\_toprealb c45\_toprealb)) (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (u1\_struct\_0 (k1\_pre\_topc k2\_topalg\_2 (k5\_toprealb c45\_toprealb))) \\ & (u1\_struct\_0 (k1\_pre\_topc k2\_topalg\_2 (k5\_toprealb (k2\_rcomp\_1 \\ & (k10\_real\_1 np\_1 np\_2) (k7\_real\_1 (k10\_real\_1 np\_1 np\_2) c5\_toprealb)))))))))) \end{aligned}$$