

t44\_afvect0 (TMPX-  
Pew6RL3qxcgv7aFZJAN5t4egBz1BMdW)

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Let  $v7\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_afvect0 : \iota \Rightarrow o$  be given. Let  $l1\_analoaf : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k5\_afvect0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_afvect0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_analoaf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_afvect0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_afvect0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $g2\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v8\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v2\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $k3\_afvect0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k5\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_afvect0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_algstr\_0 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge (l1\_analoaf \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 \\ & (u1\_struct\_0 X0)) \Rightarrow (r2\_analoaf X0 X1 X2 (k1\_afvect0 X0 X3 X2) (k1\_afvect0 \\ & X0 X3 X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge (l1\_analoaf \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((k1\_afvect0 X0 X1 X2 = X2) \Leftrightarrow ( \\ & X2 = X1) \vee (r1\_afvect0 X0 X2 X1)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1\_funct\_1 X1) \wedge (v1\_funct\_2 \\ & X1 (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X0) X0)))) \wedge (m1\_subset\_1 X2 X0)) \Rightarrow (\forall X3. \\ & \forall X4. \forall X5. (g2\_algstr\_0 X0 X1 X2 = g2\_algstr\_0 X3 X4 X5) \Rightarrow \\ & ((X0 = X3) \wedge ((X1 = X4) \wedge (X2 = X5)))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge \\ & (l1\_analoaf X0))) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow ((v8\_algstr\_0 \\ & (k5\_afvect0 X0 X1)) \wedge ((v13\_algstr\_0 (k5\_afvect0 X0 X1)) \wedge ((v2\_rlvect\_1 \\ & (k5\_afvect0 X0 X1)) \wedge ((v3\_rlvect\_1 (k5\_afvect0 X0 X1)) \wedge (v4\_rlvect\_1 \\ & (k5\_afvect0 X0 X1)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge \\ & (l1\_analoaf X0))) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow ((\neg v2\_struct\_0 \\ & (k5\_afvect0 X0 X1)) \wedge (v8\_algstr\_0 (k5\_afvect0 X0 X1))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0. (l2\_algstr\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l1\_algstr\_0 X0)) \quad (7)$$

Assume the following.

$$\forall X0. (l1\_algstr\_0 X0) \Rightarrow (l1\_struct\_0 X0) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge \\ & (l1\_analoaf X0))) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow ((v8\_algstr\_0 \\ & (k5\_afvect0 X0 X1)) \wedge (l2\_algstr\_0 (k5\_afvect0 X0 X1))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge \\ & (l1\_analoaf X0))) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow ((v1\_funct\_1 \\ & (k4\_afvect0 X0 X1)) \wedge ((v1\_funct\_2 (k4\_afvect0 X0 X1) (u1\_struct\_0 \\ & X0) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 (k4\_afvect0 X0 X1) (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((\neg v1\_xboole\_0 X0) \wedge \\ & (((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1)))))) \wedge (m1\_subset\_1 X3 X0)) \Rightarrow (m1\_subset\_1 ( \\ & k3\_funct\_2 X0 X1 X2 X3) X1) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge \\ & (l1\_analoaf X0))) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 X0))) \Rightarrow ((v1\_funct\_1 \\ & (k3\_afvect0 X0 X1)) \wedge ((v1\_funct\_2 (k3\_afvect0 X0 X1) (k2\_zfmisc\_1 \\ & (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 \\ & (k3\_afvect0 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\ & X0) (u1\_struct\_0 X0)) (u1\_struct\_0 X0)))))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge (l1\_analoaf \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k5\_afvect0 \\ & X0 X1 = g2\_algstr\_0 (u1\_struct\_0 X0) (k3\_afvect0 X0 X1) X1)) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge (l1\_analoaf \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 \\ & X0)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\ & X0) (u1\_struct\_0 X0)))))) \Rightarrow ((X2 = k4\_afvect0 X0 X1) \Leftrightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (k3\_funct\_2 (u1\_struct\_0 X0) \\ & (u1\_struct\_0 X0) X2 X3 = k1\_afvect0 X0 X1 X3)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\forall X0. (l2\_struct\_0 X0) \Rightarrow (k4\_struct\_0 X0 = u2\_struct\_0 X0) \quad (15)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge (l1\_analoaf \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (k2\_zfmisc\_1 (u1\_struct\_0 X0) \\ & (u1\_struct\_0 X0)) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) \\ & (u1\_struct\_0 X0)))))) \Rightarrow ((X2 = k3\_afvect0 X0 X1) \Leftrightarrow (\forall X3. (m1\_subset\_1 \\ & X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4. (m1\_subset\_1 X4 (u1\_struct\_0 \\ & X0)) \Rightarrow (k5\_binop\_1 (u1\_struct\_0 X0) X2 X3 X4 = k2\_afvect0 X0 X1 X3 X4)))))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge (l1\_analoaf \\
& X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
& (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\
& (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\
& ((X4 = k2\_afvect0 X0 X1 X2 X3) \Leftrightarrow (r2\_analoaf X0 X1 X2 X3 X4))))))
\end{aligned} \tag{17}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l1\_algstr\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (k1\_algstr\_0 \\
& X0 X1 X2 = k5\_binop\_1 (u1\_struct\_0 X0) (u1\_algstr\_0 X0) X1 X2)))
\end{aligned} \tag{18}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_algstr\_0 X0)) \Rightarrow (\forall X1. \\
& (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 \\
& X0) \wedge (v13\_algstr\_0 X0))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\
& X0)) \Rightarrow ((X2 = k4\_algstr\_0 X0 X1) \Leftrightarrow (k1\_algstr\_0 X0 X1 X2 = k4\_struct\_0 \\
& X0))))))
\end{aligned} \tag{19}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l2\_algstr\_0 X0) \Rightarrow ((v8\_algstr\_0 X0) \Rightarrow (X0 = g2\_algstr\_0 \\
& (u1\_struct\_0 X0) (u1\_algstr\_0 X0) (u2\_struct\_0 X0)))
\end{aligned} \tag{20}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v1\_afvect0 X0) \wedge (l1\_analoaf \\
& X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
& (m1\_subset\_1 X2 (u1\_struct\_0 (k5\_afvect0 X0 X1))) \Rightarrow (\forall X3. \\
& (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow ((X2 = X3) \Rightarrow (k4\_algstr\_0 (k5\_afvect0 \\
& X0 X1) X2 = k3\_funct\_2 (u1\_struct\_0 X0) (u1\_struct\_0 X0) (k4\_afvect0 \\
& X0 X1) X3))))))
\end{aligned}$$