

t22\_midsp\_2  
(TMMPPf1WSnPPG4AV4y5ev7jnTtGrdaYHAKc)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_midsp\_1 : \iota \Rightarrow o$  be given. Let  $l1\_midsp\_1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k8\_midsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_midsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_midsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_midsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_midsp\_1 X0) \wedge (l1\_midsp\_1 \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ & (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\ & ((k8\_midsp\_1 X0 X1 X2 = k8\_midsp\_1 X0 X3 X4) \Rightarrow (k3\_midsp\_1 X0 X1 X4 = \\ & k3\_midsp\_1 X0 X2 X3)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_midsp\_1 X0) \wedge (l1\_midsp\_1 \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ & (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\ & ((r2\_midsp\_1 X0 (k1\_domain\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0) \\ & X1 X2) (k1\_domain\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0) X3 X4) \Rightarrow ( \\ & k8\_midsp\_1 X0 X1 X2 = k8\_midsp\_1 X0 X3 X4)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_midsp\_1 X0) \wedge (l1\_midsp\_1 \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ & (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\ & ((r1\_midsp\_1 X0 X1 X2 X3 X4) \Rightarrow (r2\_midsp\_1 X0 (k1\_domain\_1 (u1\_struct\_0 \\ & X0) (u1\_struct\_0 X0) X1 X2) (k1\_domain\_1 (u1\_struct\_0 X0) (u1\_struct\_0 \\ & X0) X3 X4)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_midsp\_1 X0) \wedge (l1\_midsp\_1 \\
& \quad X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\
& \quad (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\
& \quad ((r1\_midsp\_1 X0 X1 X2 X3 X4) \Leftrightarrow (k3\_midsp\_1 X0 X1 X4 = k3\_midsp\_1 X0 X2 \\
& \quad \quad X3))))))
\end{aligned} \tag{4}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_midsp\_1 X0) \wedge (l1\_midsp\_1 \\
& \quad X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\
& \quad (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\
& \quad ((k8\_midsp\_1 X0 X1 X2 = k8\_midsp\_1 X0 X3 X4) \Leftrightarrow (k3\_midsp\_1 X0 X1 X4 = \\
& \quad \quad k3\_midsp\_1 X0 X2 X3))))))
\end{aligned}$$