

t10\_nat\_lat  
(TMJjMkAoydRmo3Sezbnk8bpEpZBuJjpxQSA)

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Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_nat\_lat : \iota$  be given. Let  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_nat\_lat : \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 (u1\_struct\_0 k3\_nat\_lat)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 k3\_nat\_lat)) \Rightarrow (\forall X2.(m1\_subset\_1 \\ & X2 (u1\_struct\_0 k3\_nat\_lat)) \Rightarrow (k1\_binop\_1 k1\_nat\_lat X0 (k1\_binop\_1 \\ & k1\_nat\_lat X1 X2) = k1\_binop\_1 k1\_nat\_lat (k1\_binop\_1 k1\_nat\_lat \\ & X0 X1) X2))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 (u1\_struct\_0 k3\_nat\_lat)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 k3\_nat\_lat)) \Rightarrow (k1\_binop\_1 k1\_nat\_lat \\ & X0 X1 = k1\_binop\_1 k1\_nat\_lat X1 X0)) \end{aligned} \quad (2)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 (u1\_struct\_0 k3\_nat\_lat)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 k3\_nat\_lat)) \Rightarrow (\forall X2.(m1\_subset\_1 \\ & X2 (u1\_struct\_0 k3\_nat\_lat)) \Rightarrow ((k1\_binop\_1 k1\_nat\_lat X0 (k1\_binop\_1 \\ & k1\_nat\_lat X1 X2) = k1\_binop\_1 k1\_nat\_lat (k1\_binop\_1 k1\_nat\_lat \\ & X1 X0) X2) \wedge ((k1\_binop\_1 k1\_nat\_lat X0 (k1\_binop\_1 k1\_nat\_lat X1 \\ & X2) = k1\_binop\_1 k1\_nat\_lat (k1\_binop\_1 k1\_nat\_lat X0 X2) X1) \wedge \\ & (k1\_binop\_1 k1\_nat\_lat X0 (k1\_binop\_1 k1\_nat\_lat X1 X2) = k1\_binop\_1 \\ & k1\_nat\_lat (k1\_binop\_1 k1\_nat\_lat X2 X1) X0) \wedge (k1\_binop\_1 k1\_nat\_lat \\ & X0 (k1\_binop\_1 k1\_nat\_lat X1 X2) = k1\_binop\_1 k1\_nat\_lat (k1\_binop\_1 \\ & k1\_nat\_lat X2 X0) X1)))))) \end{aligned}$$