

# t34\_normsp\_2 (TMXpG- fUxz4RGkMvMurDpp4PoLFMyE6bFoCG)

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Let  $v2\_struct.0 : \iota \Rightarrow o$  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  $v5\_rlvect.1 : \iota \Rightarrow o$  be given. Let  $v6\_rlvect.1 : \iota \Rightarrow o$  be given. Let  $v7\_rlvect.1 : \iota \Rightarrow o$  be given. Let  $v8\_rlvect.1 : \iota \Rightarrow o$  be given. Let  $v3\_normsp.0 : \iota \Rightarrow o$  be given. Let  $v4\_normsp.0 : \iota \Rightarrow o$  be given. Let  $v2\_normsp.1 : \iota \Rightarrow o$  be given. Let  $l1\_normsp.1 : \iota \Rightarrow o$  be given. Let  $m1\_subset.1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc.1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct.0 : \iota \Rightarrow \iota$  be given. Let  $k3\_normsp.2 : \iota \Rightarrow \iota$  be given. Let  $k4\_normsp.2 : \iota \Rightarrow \iota$  be given. Let  $m1\_connsp.2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v3\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $g1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  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  $k1\_numbers : \iota$  be given. Let  $g1\_metric.1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v5\_rltopsp1 : \iota \Rightarrow o$  be given. Let  $v6\_rltopsp1 : \iota \Rightarrow o$  be given. Let  $v7\_rltopsp1 : \iota \Rightarrow o$  be given. Let  $l1\_metric.1 : \iota \Rightarrow o$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $k3\_pcomps.1 : \iota \Rightarrow \iota$  be given. Let  $v4\_frechet : \iota \Rightarrow o$  be given. Let  $u1\_pre\_topc : \iota \Rightarrow \iota$  be given. Let  $l1\_rltopsp1 : \iota \Rightarrow o$  be given. Let  $l1\_rlvect.1 : \iota \Rightarrow o$  be given. Let  $k2\_normsp.2 : \iota \Rightarrow \iota$  be given. Let  $v6\_metric.1 : \iota \Rightarrow o$  be given. Let  $v7\_metric.1 : \iota \Rightarrow o$  be given. Let  $v8\_metric.1 : \iota \Rightarrow o$  be given. Let  $v9\_metric.1 : \iota \Rightarrow o$  be given. Let  $k1\_normsp.2 : \iota \Rightarrow \iota$  be given. Let  $v1\_metric.1 : \iota \Rightarrow o$  be given. Let  $k2\_pcomps.1 : \iota \Rightarrow \iota$  be given. Let  $k4\_struct.0 : \iota \Rightarrow \iota$  be given. Let  $r1\_funct.2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_algstr.0 : \iota \Rightarrow \iota$  be given. Let  $u1\_rlvect.1 : \iota \Rightarrow \iota$  be given. Let  $u1\_metric.1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct.0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1.(m1\_subset.1 X1 (u1\_struct.0 X0)) \Rightarrow (\forall X2.1 \\ & (m1\_subset.1 X2 (k1\_zfmisc.1 (u1\_struct.0 X0))) \Rightarrow ((m1\_connsp.2 \\ & X2 X0 X1) \Leftrightarrow (\exists X3.(m1\_subset.1 X3 (k1\_zfmisc.1 (u1\_struct.0 \\ & X0))) \wedge ((v3\_pre\_topc X3 X0) \wedge ((r1\_tarski X3 X2) \wedge (X1 \in X3))))))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((X0 \in X1) \wedge (m1\_subset.1 X1 (k1\_zfmisc.1 X2))) \Rightarrow (m1\_subset.1 X0 X2) \quad (2)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\
& ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\
& X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 (k3\_normsp\_2 \\
& X0)))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\
& (k4\_normsp\_2 X0)))) \Rightarrow ((X1 = X2) \Rightarrow ((v3\_pre\_topc X1 (k3\_normsp\_2 \\
& X0)) \Leftrightarrow (v3\_pre\_topc X2 (k4\_normsp\_2 X0))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k1\_zfmisc\_1 \\
& X0))) \Rightarrow (\forall X2. \forall X3.(g1\_pre\_topc X0 X1 = g1\_pre\_topc \\
& X2 X3) \Rightarrow ((X0 = X2) \wedge (X1 = X3)))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 \\
& X0 X0) k1\_numbers) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (k2\_zfmisc\_1 X0 X0) k1\_numbers)))))) \Rightarrow (\forall X2. \forall X3.( \\
& g1\_metric\_1 X0 X1 = g1\_metric\_1 X2 X3) \Rightarrow ((X0 = X2) \wedge (X1 = X3)))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\
& ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\
& X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\
& ((\neg v2\_struct\_0 (k4\_normsp\_2 X0)) \wedge ((v2\_pre\_topc (k4\_normsp\_2 \\
& X0)) \wedge ((v13\_algstr\_0 (k4\_normsp\_2 X0)) \wedge ((v2\_rlvect\_1 (k4\_normsp\_2 \\
& X0)) \wedge ((v3\_rlvect\_1 (k4\_normsp\_2 X0)) \wedge ((v4\_rlvect\_1 (k4\_normsp\_2 \\
& X0)) \wedge ((v5\_rlvect\_1 (k4\_normsp\_2 X0)) \wedge ((v6\_rlvect\_1 (k4\_normsp\_2 \\
& X0)) \wedge ((v7\_rlvect\_1 (k4\_normsp\_2 X0)) \wedge ((v8\_rlvect\_1 (k4\_normsp\_2 \\
& X0)) \wedge ((v5\_rltopsp1 (k4\_normsp\_2 X0)) \wedge ((v6\_rltopsp1 (k4\_normsp\_2 \\
& X0)) \wedge (v7\_rltopsp1 (k4\_normsp\_2 X0))))))))))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l1\_metric\_1 X0) \Rightarrow ((v1\_pre\_topc (k3\_pcomps\_1 X0)) \wedge \\
& (v2\_pre\_topc (k3\_pcomps\_1 X0)))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned} \forall X0. (& \neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ & X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\ & ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\ & X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\ & ((\neg v2\_struct\_0 (k3\_normsp\_2 X0)) \wedge ((v2\_pre\_topc (k3\_normsp\_2 \\ & X0)) \wedge (v4\_frechet (k3\_normsp\_2 X0)))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0. (l1\_pre\_topc X0) \Rightarrow (m1\_subset\_1 (u1\_pre\_topc X0) (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \quad (9)$$

Assume the following.

$$\forall X0. (l1\_rltopsp1 X0) \Rightarrow ((l1\_rlvect\_1 X0) \wedge (l1\_pre\_topc X0)) \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0. (& \neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ & X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\ & ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\ & X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\ & ((\neg v2\_struct\_0 (k4\_normsp\_2 X0)) \wedge ((v5\_rltopsp1 (k4\_normsp\_2 \\ & X0)) \wedge (l1\_rltopsp1 (k4\_normsp\_2 X0)))) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0. (l1\_metric\_1 X0) \Rightarrow (l1\_pre\_topc (k3\_pcomps\_1 X0)) \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0. (& \neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ & X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\ & ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\ & X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\ & ((\neg v2\_struct\_0 (k2\_normsp\_2 X0)) \wedge ((v6\_metric\_1 (k2\_normsp\_2 \\ & X0)) \wedge ((v7\_metric\_1 (k2\_normsp\_2 X0)) \wedge ((v8\_metric\_1 (k2\_normsp\_2 \\ & X0)) \wedge ((v9\_metric\_1 (k2\_normsp\_2 X0)) \wedge (l1\_metric\_1 (k2\_normsp\_2 \\ & X0)))))))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\
& ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\
& X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\
& ((v1\_funct\_1 (k1\_normsp\_2 X0)) \wedge ((v1\_funct\_2 (k1\_normsp\_2 X0) \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) k1\_numbers) \wedge \\
& (m1\_subset\_1 (k1\_normsp\_2 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0)) k1\_numbers))))))
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 \\
& X0 X0) k1\_numbers) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (k2\_zfmisc\_1 X0 X0) k1\_numbers)))))) \Rightarrow ((v1\_metric\_1 (g1\_metric\_1 \\
& X0 X1)) \wedge (l1\_metric\_1 (g1\_metric\_1 X0 X1)))
\end{aligned} \tag{15}$$

Assume the following.

$$\begin{aligned}
& \forall X0. (l1\_metric\_1 X0) \Rightarrow (k3\_pcomps\_1 X0 = g1\_pre\_topc (u1\_struct\_0 \\
& X0) (k2\_pcomps\_1 X0))
\end{aligned} \tag{16}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\
& ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\
& X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\
& (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v5\_rltopsp1 X1) \wedge (l1\_rltopsp1 \\
& X1))) \Rightarrow ((X1 = k4\_normsp\_2 X0) \Leftrightarrow ((u1\_struct\_0 X1 = u1\_struct\_0 X0) \wedge \\
& ((k4\_struct\_0 X1 = k4\_struct\_0 X0) \wedge ((r1\_funct\_2 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X1) (u1\_struct\_0 X1)) (u1\_struct\_0 X1) (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 X0) (u1\_algstr\_0 \\
& X1) (u1\_algstr\_0 X0)) \wedge ((r1\_funct\_2 (k2\_zfmisc\_1 k1\_numbers ( \\
& u1\_struct\_0 X1)) (u1\_struct\_0 X1) (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 \\
& X0)) (u1\_struct\_0 X0) (u1\_rlvect\_1 X1) (u1\_rlvect\_1 X0)) \wedge (u1\_pre\_topc \\
& X1 = u1\_pre\_topc (k3\_normsp\_2 X0)))))))))
\end{aligned} \tag{17}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\
& ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\
& X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\
& (k3\_normsp\_2 X0 = k3\_pcomps\_1 (k2\_normsp\_2 X0))
\end{aligned} \tag{18}$$

Assume the following.

$$\begin{aligned} \forall X0. (&(\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ &X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\ &((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\ &X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\ &(k2\_normsp\_2 X0 = g1\_metric\_1 (u1\_struct\_0 X0) (k1\_normsp\_2 X0)) \end{aligned} \quad (19)$$

Assume the following.

$$\forall X0. (l1\_pre\_topc X0) \Rightarrow ((v1\_pre\_topc X0) \Rightarrow (X0 = g1\_pre\_topc (u1\_struct\_0 X0) (u1\_pre\_topc X0))) \quad (20)$$

Assume the following.

$$\forall X0. (l1\_metric\_1 X0) \Rightarrow ((v1\_metric\_1 X0) \Rightarrow (X0 = g1\_metric\_1 (u1\_struct\_0 X0) (u1\_metric\_1 X0))) \quad (21)$$

**Theorem 1**

$$\begin{aligned} \forall X0. (&(\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ &X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\ &((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\ &X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\ &(\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 (k3\_normsp\_2 \\ &X0)))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\ &(k4\_normsp\_2 X0)))) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 \\ &(k3\_normsp\_2 X0)))) \Rightarrow (\forall X4. (m1\_subset\_1 X4 (u1\_struct\_0 \\ &(k4\_normsp\_2 X0)))) \Rightarrow (((X1 = X2) \wedge (X3 = X4)) \Rightarrow ((m1\_connsp\_2 X1 (k3\_normsp\_2 \\ &X0) X3) \Leftrightarrow (m1\_connsp\_2 X2 (k4\_normsp\_2 X0) X4)))))) \end{aligned}$$