Lemma. *If* α *and* β *are* 1*-forms on* $T_p\mathbf{R}^3$ *and* V *is a nonzero vector in the plane spanned by* $\langle\alpha\rangle$ *and* $\langle\beta\rangle$*,then there is a vector,*W*,in this plane such that*

$$\alpha \wedge \beta = \langle V\rangle^{-1} \wedge \langle W\rangle^{-1}. \tag{1}$$

Proof. Let V_1, V_2 be two linearly independent vectors in $T_p\mathbf{R}^3$.In order to prove formula (1),we only need to prove that there exists W in the plane spanned by $\langle\alpha\rangle$ and $\langle\beta\rangle$ such that

$$\alpha \wedge \beta(V_1, V_2) = \langle V\rangle^{-1} \wedge \langle W\rangle^{-1}(V_1, V_2).$$

□