

no - infinitesimal generator

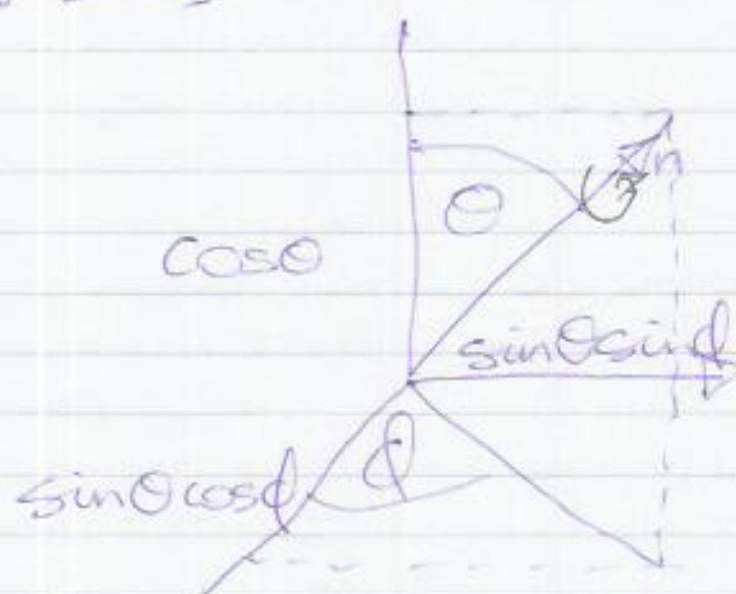
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$$R_t(x-y) = \cos t \left(\frac{d}{dt} R_t \right) \Big|_{t=0} (x-y) + (1-\cos t)(n \cdot (x-y))n + \sin t \, n \times (x-y)$$

Put $u = x-y$

$$R_t(u) = \cos t \, u + (1-\cos t)(n \cdot u)n + \sin t \, (n \times u)$$

$R_t(u)$ is a linear transformation so we need only consider the effect on the basis vectors e_1, e_2, e_3



with n a unit vector, $n = \begin{pmatrix} \sin \theta \cos \phi \\ \sin \theta \sin \phi \\ \cos \theta \end{pmatrix}$

$$\begin{aligned} R_t \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} &= \begin{pmatrix} \cos t \\ 0 \\ 0 \end{pmatrix} + (1-\cos t) \begin{pmatrix} \sin \theta \cos \phi \\ \sin \theta \sin \phi \\ \cos \theta \end{pmatrix} \\ &+ \sin t \begin{pmatrix} \sin \theta \cos \phi \\ \sin \theta \sin \phi \\ \cos \theta \end{pmatrix} \times \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} \\ &= \begin{pmatrix} \cos t + (1-\cos t) \sin^2 \theta \cos^2 \phi \\ (1-\cos t) \sin^2 \theta \cos \phi \sin \phi \\ (1-\cos t) \sin \theta \cos \theta \cos \phi \end{pmatrix} \\ &+ \begin{pmatrix} 0 \\ \sin t \cos \theta \\ -\sin t \sin \theta \sin \phi \end{pmatrix} \end{aligned}$$