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Geometric Algebra for Physicists - Problem Set 2

to be handed in by **TBA1**

1 Pseudoaccelerations in rotating coordinate systems

In the script, we have already derived the centripetal acceleration given a position vector $\mathbf{x}$ and an angular velocity bivector Ω:

$$a_1 = \left[\left[\mathbf{x}, \frac{\Omega}{2}\right], \frac{\Omega}{2}\right] = \frac{1}{2}\left(\Omega^2\mathbf{x} - \Omega\mathbf{x}\Omega\right) \tag{1.1}$$

Now, assume that on top of the rotational motion, the object can move around in the rotating coordinate system with a velocity $\mathbf{v}$. Use this to derive the Coriolis acceleration. Does your result translate to the conventional vector expression $a = \mathbf{v} \times \boldsymbol{\omega}$?