

Problem 1.19*Relative velocity*

By *relative velocity* we mean velocity with respect to a specified coordinate system. (The term velocity, alone, is understood to be relative to the observer's coordinate system.)

- (a) A point is observed to have velocity \mathbf{v}_A relative to coordinate system A . What is its velocity relative to coordinate system B , which is displaced from system A by distance \mathbf{R} ? (\mathbf{R} can change in time.)
- (b) Particles a and b move in opposite directions around a circle with angular speed ω , as shown. At $t = 0$ they are both at the point $\mathbf{r} = l\hat{\mathbf{j}}$, where l is the radius of the circle. Find the velocity of a relative to b .

