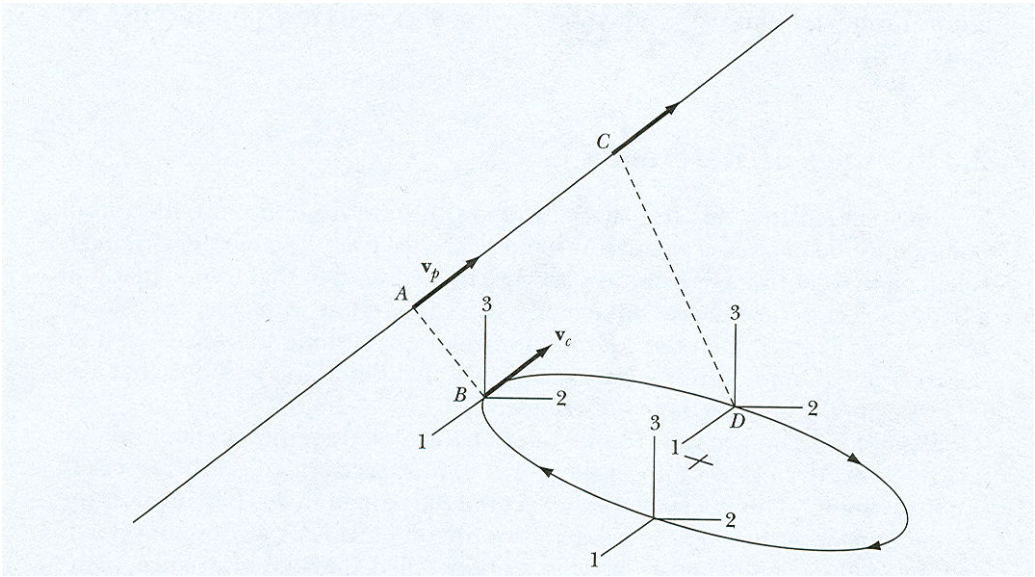
Rotating Reference Frame I

(Non-inertial Reference Frame)



Body: A free particle that moves at constant velocity $\mathbf{v}_p$ (*a straight line*) along the path AC.

Reference Frame: A Cartesian coordinate system whose axes are fixed in space, but whose origin moves in a closed elliptical path at velocity $\mathbf{v}_c = \mathbf{v}_p$.

- If a measurement of the particle is made when the particle is at point A and the coordinate system is at B, the particle appears to be **at rest** since both frames are moving at the same velocity.

- If a measurement is taken at some later time *t* when the particle is at point C and the coordinate system is at point D, the particle appears to have **accelerated** in an outward like direction.