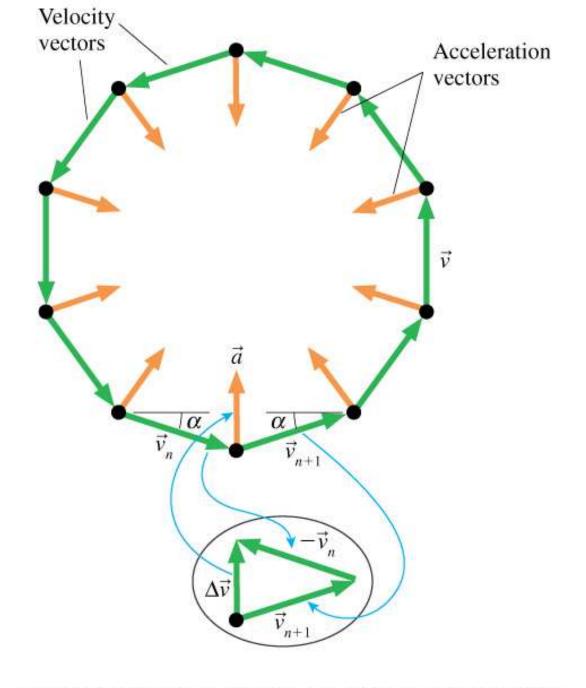
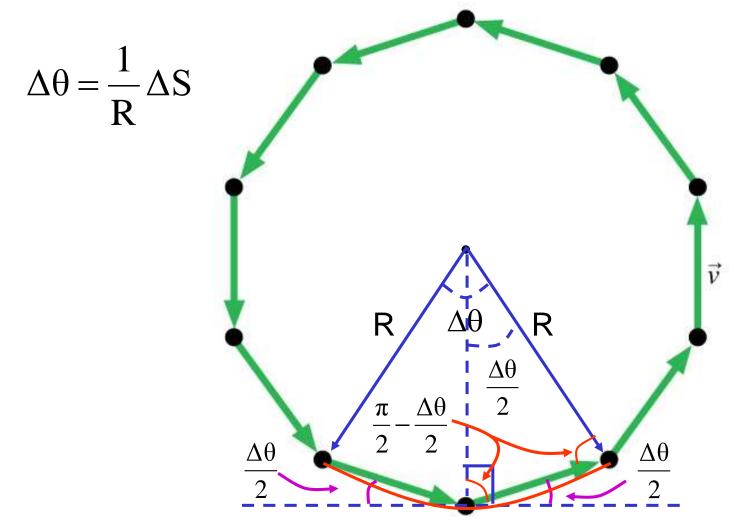


The lengths of the velocity vectors are the same, indicating constant speed, but the direction of each vector is different. This is a changing velocity.



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$$\vec{v}_i = \hat{i}v\cos(\frac{\Delta\theta}{2}) - \hat{j}v\sin(\frac{\Delta\theta}{2})^{\Delta S}\vec{v}_f = \hat{i}v\cos(\frac{\Delta\theta}{2}) + \hat{j}v\sin(\frac{\Delta\theta}{2})$$

$$\Delta \vec{v} = \hat{j} v 2 \sin(\frac{\Delta \theta}{2})$$

OHQ

$$\Delta \vec{v} = \hat{j} v 2 \sin(\frac{\Delta \theta}{2})$$

$$= \hat{j} v 2 \times \frac{\Delta \theta}{2} \quad \text{for small angles}$$

$$=\hat{j}v\Delta\theta$$

$$= \hat{j}v\frac{\Delta S}{R}$$

$$\vec{a} = \frac{\Delta \overline{v}}{\Delta t}$$

$$= \hat{j} \frac{v}{R} \frac{\Delta S}{\Delta t}$$

$$= \hat{j} \frac{v^2}{R}$$

Non-Uniform Motion

