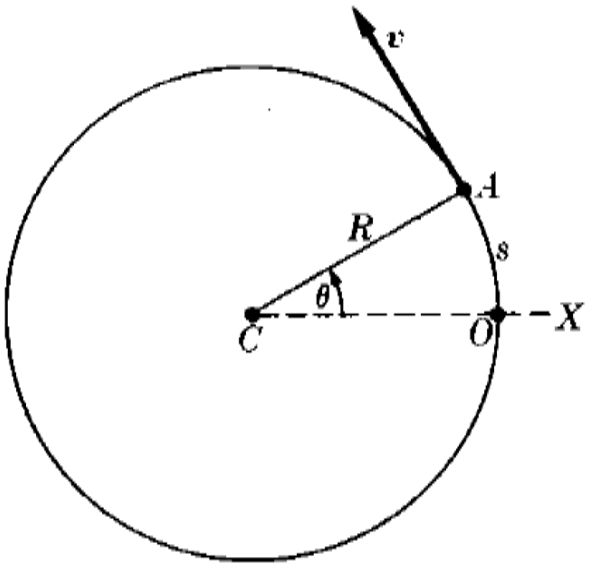
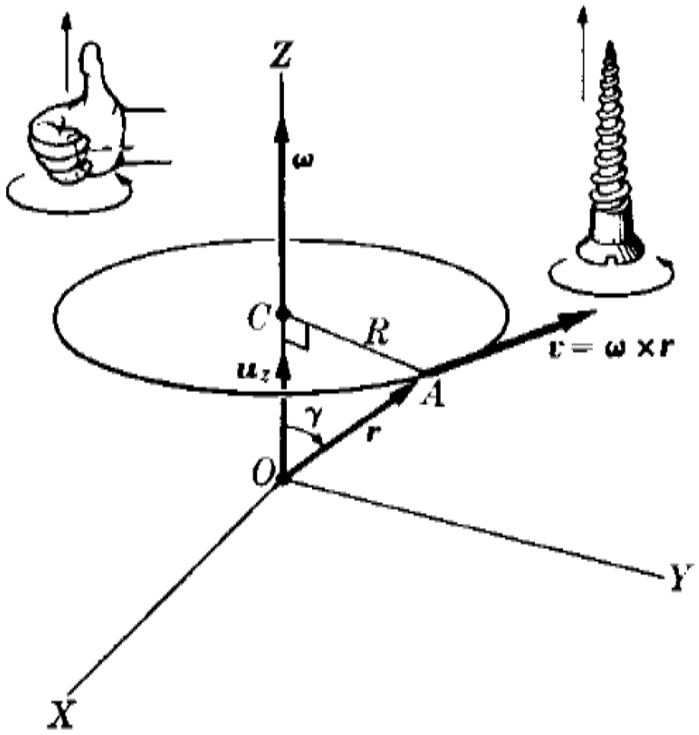
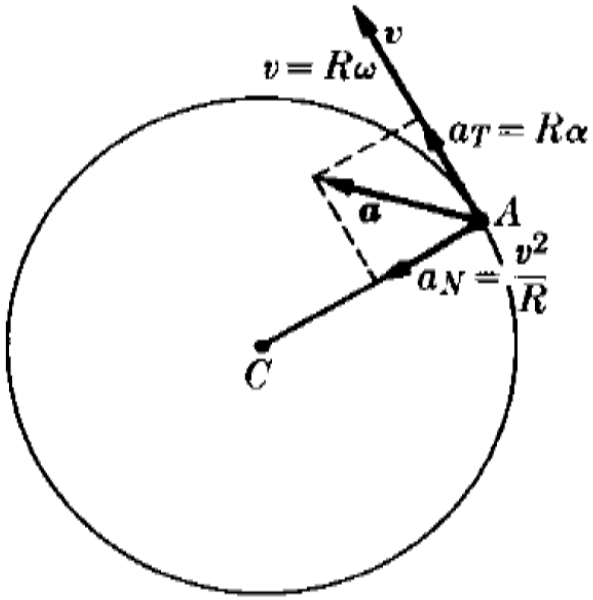
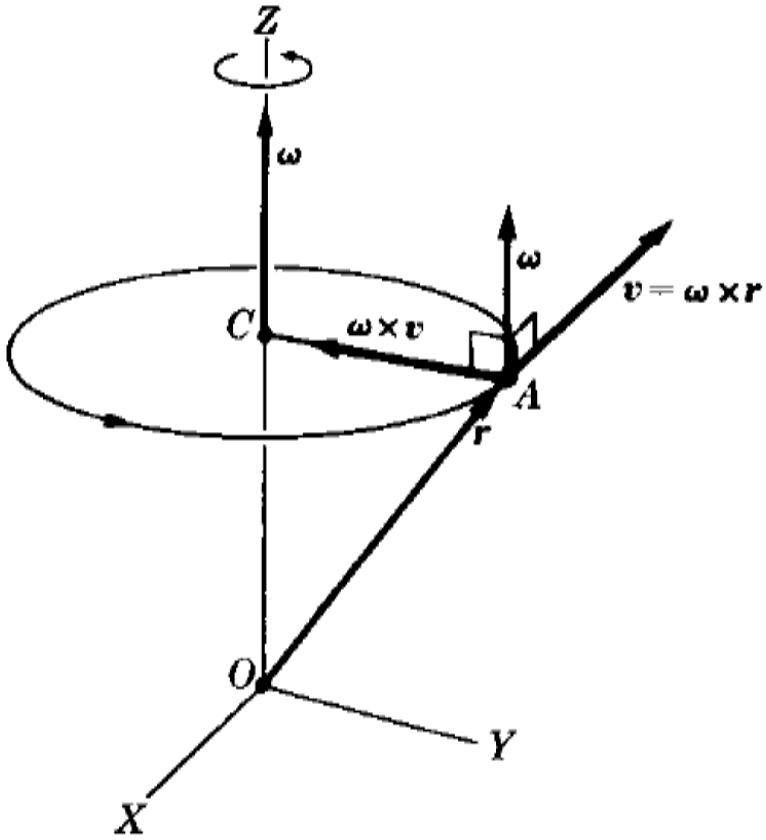
movimento circular: vetor velocidade angular





movimento circular: vetor velocidade angular





Relação com quantidades angulares

Velocidade

$$\boldsymbol{v} = \boldsymbol{\omega} \times \boldsymbol{r}.$$

Movimento circular uniforme

$$\boldsymbol{a} = \frac{d\boldsymbol{v}}{dt} = \boldsymbol{\omega} \times \frac{d\boldsymbol{r}}{dt} = \boldsymbol{\omega} \times \boldsymbol{v},$$

$$\boldsymbol{a} = \boldsymbol{\omega} \times (\boldsymbol{\omega} \times \boldsymbol{r}).$$