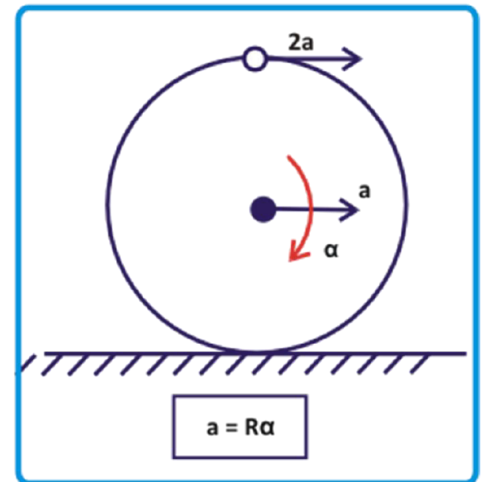
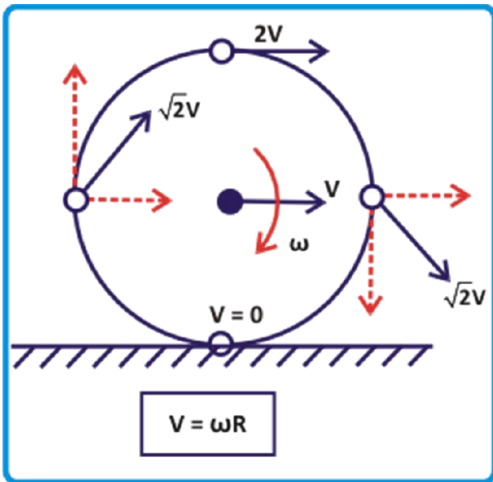


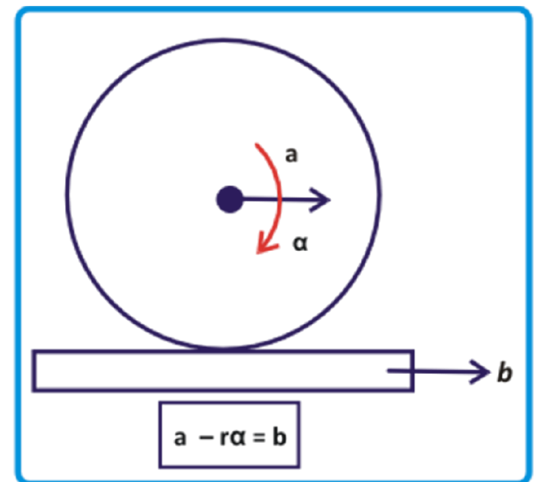
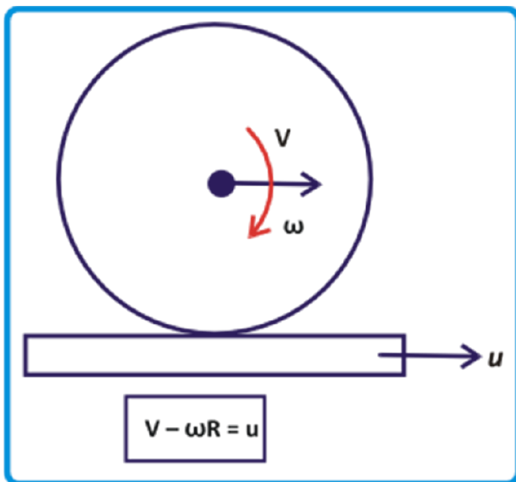
Rotational Motion

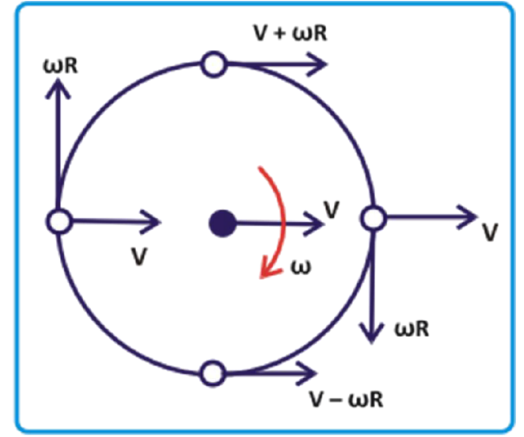
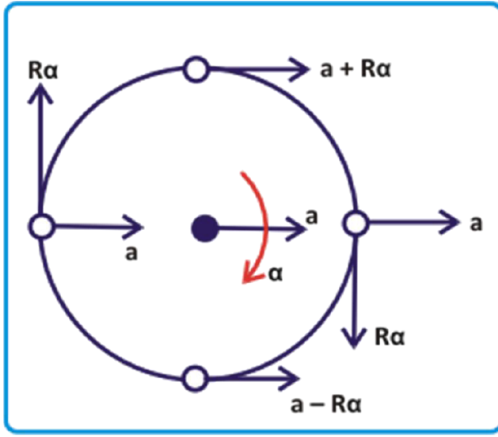
Rotational Motion : Moving Axis of Rotation

Pure Rolling on Fixed Surface



Pure Rolling on Moving Surface



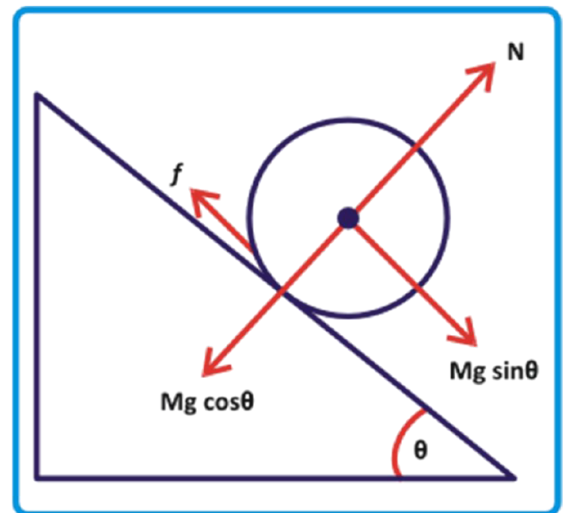


$$\vec{L} = \vec{r}_{cm} \times \vec{P}_{cm} \pm I_{cm} \vec{\omega}$$

$$TE = \frac{1}{2} M v_{cm}^2 + \frac{1}{2} I_{cm} \omega^2$$

Rolling on Inclined Plane

- ❖ $a = \frac{g \sin \theta}{1 + \frac{K^2}{R^2}}$
- ❖ $\mu_{min} = \frac{\tan \theta}{1 + \frac{R^2}{K^2}}$
- ❖ $f = \frac{mg \sin \theta}{\left(1 + \frac{R^2}{K^2}\right)}$



Rolling with Slipping

