

Kinematics

translational rotational

$$x \longrightarrow \theta$$

$$v \longrightarrow \omega$$

$$a \longrightarrow \alpha$$

Dynamics

translational rotational

$$F$$

$$\tau$$

$$m$$

$$I$$

$$\rightarrow \underline{mr^2}$$

$$p$$

$$L$$

$$\rightarrow I\omega$$

1st Law of Motion

Translational

Rotational

$$\vec{F}_{\text{net}} = \vec{0}$$

$$\vec{\tau}_{\text{net}} = \vec{0}$$

$$\vec{p} = \text{constant}$$

$$\vec{L} = \text{constant}$$

$$\left(\vec{a} = \vec{0} \text{ if } m \text{ is constant} \right)$$

$$\left(\vec{\alpha} = \vec{0} \text{ if moment of inertia } I \text{ is constant} \right)$$

$$v = \text{constant}$$

$$\omega = \text{constant}$$