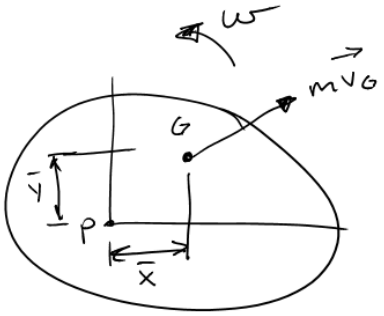
Linear Momentum

$$\vec{L} = m\vec{v}_G$$

Angular Momentum



$$+\circlearrowleft H_P = -\bar{y}(mv_{Gx}) + \bar{x}(mv_{Gy}) + I_P\omega$$

If we use G

$$+\circlearrowleft H_G = I_G\omega$$

If rotation about a fixed axis

$$H_O = I_O\omega$$

(O: Center of Rotation)

Principle of Linear Impulse and Momentum

$$m(\vec{v}_G)_1 + \sum\int_{t_1}^{t_2}\vec{F}\,dt = m(\vec{v}_G)_2$$

Principle of Angular Impulse and Momentum

$$I_G\omega_1 + \sum\int_{t_1}^{t_2} M_G\,dt = I_G\omega_2$$

- If a point other than G is used, then the moment of the momentum vector must be included

Scalar Equations

$$m(v_{Gx})_1 + \sum\int_{t_1}^{t_2} F_x\,dt = m(v_{Gx})_2$$

$$m(v_{Gy})_1 + \sum\int_{t_1}^{t_2} F_y\,dt = m(v_{Gy})_2$$

$$I_G\omega_1 + \sum\int_{t_1}^{t_2} M\,dt = I_G\omega_2$$