

$$\theta_f = \theta_i + \omega_i \Delta t + \frac{1}{2} \alpha (\Delta t)^2$$

$$\omega_f = \omega_i + \alpha \Delta t$$

$$\omega_f^2 = \omega_i^2 + 2\alpha(\Delta\theta)$$

$$\tau = F_{\perp} r$$

$$v = \omega r$$

$$a_c = \frac{v^2}{r} = \omega^2 r$$

$$x_{cg} = \frac{x_1 m_1 + x_2 m_2 + x_3 m_3 + \dots}{m_1 + m_2 + m_3 + \dots}$$

$$F_{sp} = -k \Delta x$$

$$\frac{F}{A} = Y \frac{\Delta L}{L}$$

$$\vec{p} = m \vec{v}$$

$$\vec{J} = \vec{F} \Delta t = \Delta \vec{p}$$

$$\vec{p}_i = \vec{p}_f$$

$$\Sigma \vec{F} = m \vec{a}$$

$$m_1 v_{1i} + m_2 v_{2i} = m_1 v_{1f} + m_2 v_{2f}$$

$$\vec{L} = I \vec{\omega}$$

$$g = 9.8 m/s^2$$

$$v_x = \frac{\Delta x}{\Delta t} = \frac{x_f - x_i}{\Delta t}$$

$$a_x = \frac{\Delta v_x}{\Delta t} = \frac{v_{xf} - v_{xi}}{\Delta t}$$

$$x_f = x_i + v_{xi} \Delta t + \frac{1}{2} a_x (\Delta t)^2$$

$$v_{xf} = v_{xi} + a_x \Delta t$$

$$v_{xf}^2 = v_{xi}^2 + 2a_x (\Delta x)$$

$$\sin \theta = \text{opp}/\text{hyp}$$

$$\cos \theta = \text{adj}/\text{hyp}$$

$$\tan \theta = \text{opp}/\text{adj}$$

$$a^2 + b^2 = c^2$$

Moments of inertia of common shapes

$$MR^2$$

$$\frac{1}{2}MR^2$$

$$\frac{2}{5}MR^2$$

$$\frac{1}{3}ML^2$$

$$\frac{2}{3}MR^2$$

$$\frac{1}{12}ML^2$$

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