

Anello sottile(Cm)

$$I = MR^2$$

Sbarra (Cm)

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

Sbarra(estremo)

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

Cilindro = Disco pieno = Anello  
(diametro)

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

Sfera

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

Moto puro rotolamento

$$I = (I_{cm} + I) = \frac{3}{2} MR^2 \quad \text{con } I=MR^2$$

Energia Cinetica

$$E_k = \frac{1}{2} mv^2, E_{kr} = \frac{1}{2} I\omega^2$$

Energia Potenziale

$$U = mgh, U_e = \frac{1}{2} k(\Delta x)^2$$

Lavoro non conservativo

$$E_f = E_i - L$$

Th. Energia Conservativa

$$E_i = E_f \Rightarrow E_{ki} + U_i = E_{kf} + U_f$$

Moto parabolico

$$\begin{cases} x = x_0 + v_x t \\ y = y_0 + v_y t + \frac{1}{2} at^2 \end{cases}$$

$$\begin{cases} v_x = v \cos \theta \\ v_y = v \sin \theta \\ v_f = \begin{cases} \theta = \frac{v_y}{v_x} \\ \sqrt{v_x^2 + v_y^2} \end{cases} \end{cases}$$

Altezza/gittata Max

$$\begin{cases} h_{Max} = \frac{v_0^2 \sin^2 \theta}{2g} \\ g_{Max} = \frac{2v_0^2 \cos \theta \sin \theta}{g} = \end{cases}$$

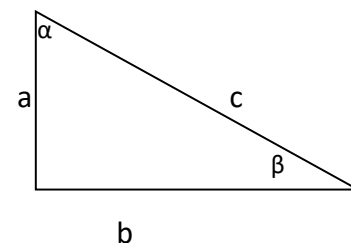
Forza elastica

$$F = -k\Delta x$$

Forza attrito

$$F_a = N\mu = mg\mu$$

$$L = F\Delta s$$



$$\begin{cases} \sin \alpha = \frac{a}{c} \\ \cos \alpha = \frac{b}{c} \\ \tan \alpha = \frac{a}{b} \end{cases}; \begin{cases} \sin \beta = \frac{b}{c} \\ \cos \beta = \frac{a}{c} \\ \tan \beta = \frac{b}{a} \end{cases}$$

$$\begin{cases} a = b \sin \alpha, & a = \frac{b}{\tan \beta} \\ b = c \cos \alpha, & b = c \sin \beta \\ c = \frac{b}{\cos \alpha}, & c = \frac{b}{\sin \beta} \end{cases}$$

Moto rettilineo uniforme

$$x = x_0 + vt$$

Moto uniformemente accelerato

$$x = x_0 + v_0 t + \frac{1}{2} at^2$$

$$v_f^2 = v_i^2 + 2ax$$

Moto circolare

$$\begin{cases} v = \omega R \\ a = \alpha R \\ a_r = \frac{v^2}{R} = \omega^2 R \end{cases}$$

Quantità di moto

$$p = mv$$

Momento angolare

$$L = p * R$$

Pendolo semplice(L = lunghezza)

$$\begin{cases} -mg \sin \beta = m \frac{dv}{dt} \\ mg \cos \beta - T = m(-\omega^2 L) \end{cases}$$

$$I = -L \frac{mg \sin \theta}{\alpha}$$

Huygens - Steiner

$$h = L \sin \left( \tan^{-1} \left( \frac{v_{Max}^2}{Rg} \right) \right)$$

Molla

Pendolo

$$\omega = \sqrt{\frac{k}{m}} \quad \omega = \sqrt{\frac{g}{L}}$$

Relazioni periodo-frequenza

$$T = \frac{2\pi}{\omega} F = \frac{1}{f}$$