Universidad de San Carlos de Guatemala, Facultad de Ingeniería
Escuela de Ciencias, Departamento de Física,
Fórmulas más utilizadas en Física 1

$$\theta = \frac{S}{r} \qquad \vec{\varpi} = \frac{\theta - \theta_0}{\Delta t} \qquad \varpi = \frac{\omega_0 + \omega_f}{2} \qquad \alpha = \frac{\omega_f - \omega_o}{\Delta t} \qquad \omega = \omega_0 + \alpha\,\Delta t \qquad \theta = \theta_o + \omega_o \Delta t + \frac{1}{2}\alpha \Delta t^2$$

$$\theta = \theta_o + \left(\frac{\omega_o + \omega_f}{2}\right)\Delta t \qquad \omega_f^2 = \omega_o^2 + 2\alpha(\theta - \theta_o) \qquad K = \frac{1}{2}mv^2 \qquad W = \Delta K \qquad a = \sqrt{a_t^2 + a_r^2}$$

$$K = \frac{1}{2}I\omega^2 \qquad v = \omega\, r \qquad a = \alpha\, r \qquad a_c = \frac{v^2}{r} = \omega^2 r \qquad I = \int r^2 dm \qquad I = mr^2 \qquad I = I_{CM} + md^2$$

$$\vec{\tau} = \vec{r} \times \vec{F} \qquad \tau = r\, F\, sen\theta \qquad \Sigma \vec{\tau} = I\, \vec{\alpha} \qquad W = \vec{F} \bullet \Delta\vec{r} \qquad W = \tau\, \Delta\theta \qquad P = \frac{W}{\Delta t} = F\, v \qquad P = \tau\, \omega$$

$$L = r \times p \qquad L = r \times mv \qquad L = I\, \omega \qquad \Delta L = \tau \Delta t \qquad \sigma = \frac{F}{A} \qquad \varepsilon = \frac{\Delta L}{L} \qquad Y = \frac{\sigma}{\varepsilon} \qquad Y = \frac{FL}{A\Delta L}$$

$$X = X_m \cos(\omega t + \phi) \qquad v = -\omega X_m sen\,(\omega t + \phi) \qquad a = -\omega^2 X_m \cos(\omega t + \phi) \qquad T = 2\pi\sqrt{\frac{m}{k}} \qquad f = \frac{1}{2\pi}\sqrt{\frac{k}{m}}$$

$$v_{\max} = \omega X_m \qquad a_{\max} = \omega^2\, X_m \qquad E = \frac{1}{2}kX_{\max}^2 \qquad E = \frac{1}{2}mv_{\max}^2 \qquad T = 2\pi\sqrt{\frac{L}{g}} \qquad T = 2\pi\sqrt{\frac{I}{Mgd}}$$

$$p = \frac{F}{A} \qquad \rho = \frac{m}{Vol} \qquad p = p_o + \rho g h \qquad R = Av \qquad A_1 v_1 = A_2 v_2 \qquad \omega = \frac{2\pi}{T} \qquad k = \frac{2\pi}{\lambda} \qquad \lambda = vT$$

$$p_1 + \frac{1}{2}\rho v_1^2 + \rho g y_1 = p_2 + \frac{1}{2}\rho v_2^2 + \rho g y_2 \qquad y(x,t) = y_{\max} sen\frac{2\pi}{\lambda}(x - vt) \qquad y(x,t) = y_{\max} sen(kx - \omega t + \phi)$$

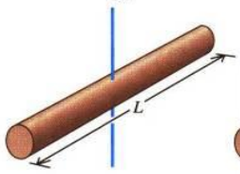
$$v = \sqrt{\frac{T}{\mu}} \qquad F = G\frac{m_1 m_2}{d^2} \qquad G = 6.67x10^{-11}\frac{N.m^2}{kg^2} \qquad g_0 = G\frac{M_T}{r^2} \qquad U(r) = -G\frac{M.m}{r}$$

$$v = \sqrt{\frac{2GM}{R}} \qquad T^2 = \left(\frac{4\pi^2}{GM}\right) r^3$$

51. Tabla 9.2 Momentos de inercia de diversos cuerpos

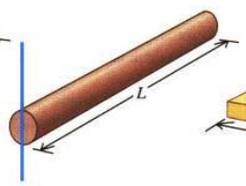
a) Varilla delgada, eje por el centro

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



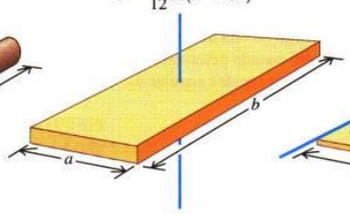
b) Varilla delgada, eje por un extremo

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



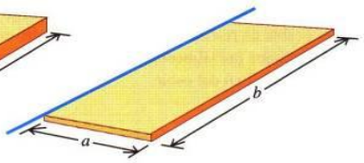
c) Placa rectangular, eje por el centro

$I = \frac{1}{12}M(a^2 + b^2)$



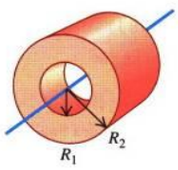
d) Placa rectangular delgada, eje en un borde

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



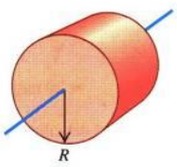
e) Cilindro hueco

$I = \frac{1}{2}M(R_1^2 + R_2^2)$



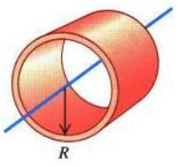
f) Cilindro sólido

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



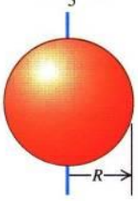
g) Cilindro hueco de pared delgada

$I = MR^2$



h) Esfera sólida

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



i) Esfera hueca de pared delgada

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