

Aclaración: Esto es una ayuda memoria de fórmulas. Usted debe saber cómo y cuándo aplicar cada fórmula.

Perímetro de una circunferencia = $2\pi r$; Área del círculo = πr^2 ;

Volumen del cilindro = $\pi r^2 h$

$$\vec{a} = \dot{\vec{v}} = \ddot{\vec{r}}$$

$$v(t) = v_0 + a(t - t_0); x(t) = x_0 + v_0(t - t_0) + \frac{a}{2}(t - t_0)^2$$

$$\sum_i \vec{F}_i = m\vec{a}; F_{roz} = \mu N$$

$$\vec{r} = r\hat{r}; \vec{v} = \dot{r}\hat{r} + r\dot{\theta}\hat{\theta}; \vec{a} = (\ddot{r} - r\dot{\theta}^2)\hat{r} + (r\ddot{\theta} + 2\dot{r}\dot{\theta})\hat{\theta}; (\dot{\theta} = \omega)$$

$$F_{elast} = -K\Delta x$$

$$x(t) = A\cos(\omega t + \phi) + X_{eq}; \omega = \sqrt{K/m}; f = 1/T = \omega/2\pi$$

$$\ddot{x} + \omega_0^2 x + \frac{\gamma}{m}\dot{x} = 0$$

$$\text{Si } \left(\frac{\gamma}{2m}\right)^2 < \omega_0^2,$$

$$x(t) = Ae^{-\lambda t} \cos(\omega_{am} t + \phi)$$

$$\lambda = \frac{\gamma}{2m}, \omega_{am}^2 = \omega_0^2 - \left(\frac{\gamma}{2m}\right)^2$$

$$\text{Si } \left(\frac{\gamma}{2m}\right)^2 > \omega_0^2,$$

$$x(t) = Ae^{\lambda_1 t} + Be^{\lambda_2 t}$$

$$\lambda_1 = -\frac{\gamma}{2m} + \sqrt{\left(\frac{\gamma}{2m}\right)^2 - \omega_0^2}$$

$$\lambda_2 = -\frac{\gamma}{2m} - \sqrt{\left(\frac{\gamma}{2m}\right)^2 - \omega_0^2}$$

$$\vec{r}_{cm} = \frac{\sum_i m_i \vec{r}_i}{\sum_i m_i}; \vec{p} = m\vec{v}; \vec{p} = \sum_i \vec{p}_i$$

$$\frac{d\vec{p}}{dt} = \sum \vec{F}_{ext}; W_F = \int_A^B \vec{F} \cdot d\vec{r}$$

$$F_{cons} = -\frac{dU}{dx}$$

$$E_{cin} = \frac{1}{2}mv^2; U_{gravitatoria} = mgh; U_{elastica} = \frac{1}{2}K\Delta x^2$$

$$E_{mecanica} = E_{cin} + \sum_i U_i; W_{tot} = \Delta E_{cin}; W_{nocons} = \Delta E_{mec}$$

$$\vec{L}_o = m(\vec{r} - \vec{r}_o) \times \vec{v}; \frac{d\vec{L}_o}{dt} = \sum_i \vec{M}_i = \sum_i (\vec{r}_i - \vec{r}_o) \times \vec{F}_i^{ext}$$