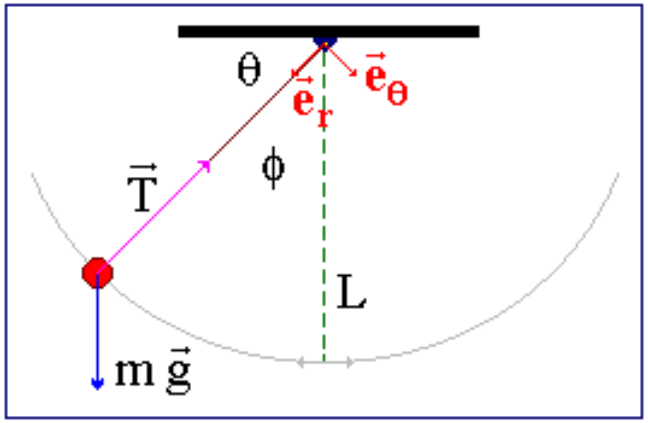
Péndulo

$$\vec{T} + m\vec{g} = m\vec{a}$$



$$\vec{e}_r\rangle \quad mg\,\mathrm{sen}\,\theta - T = m\left(\ddot{r} - r\dot{\theta}^2\right)$$

$$\vec{e}_\theta\rangle \quad mg\cos\theta = m\left(r\ddot{\theta} + 2\dot{r}\dot{\theta}\right)$$

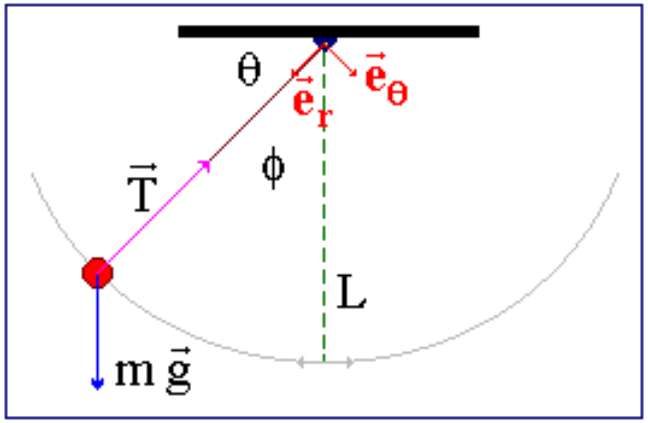
$$\vec{e}_r\rangle \quad mg\,\mathrm{sen}\,\theta - T = -mL\dot{\theta}^2$$

$$\vec{e}_\theta\rangle \quad mg\cos\theta = mL\ddot{\theta}$$

Péndulo

$$\vec{e}_r\rangle \quad mg\,\mathrm{sen}\,\theta - T = -mL\dot{\theta}^2$$

$$\vec{e}_\theta\rangle \quad mg\cos\theta = mL\ddot{\theta}$$



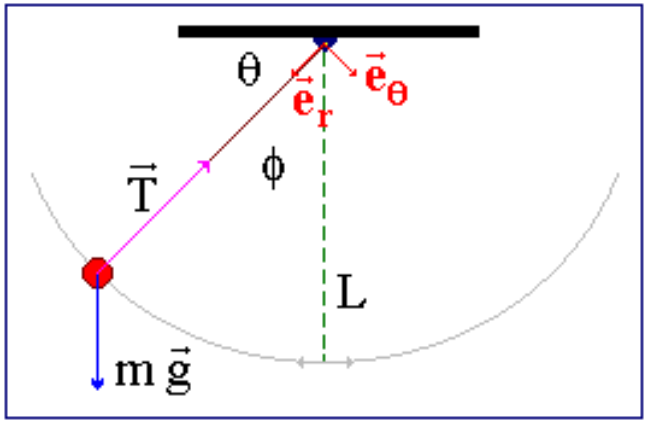
$$\ddot{\theta} = -\left(\frac{g}{L}\right)\cos\theta$$

$$\ddot{\phi} = -\left(\frac{g}{L}\right)\mathrm{sen}\,\phi$$

Péndulo

$$\vec{e}_r\rangle \quad mg\,\mathrm{sen}\,\theta - T = -mL\dot{\theta}^2$$

$$\vec{e}_\theta\rangle \quad mg\cos\theta = mL\ddot{\theta}$$



$$\ddot{\phi} = -\left(\frac{g}{L}\right)\mathrm{sen}\,\phi$$

$$\mathrm{sen}\,\phi \cong \phi$$

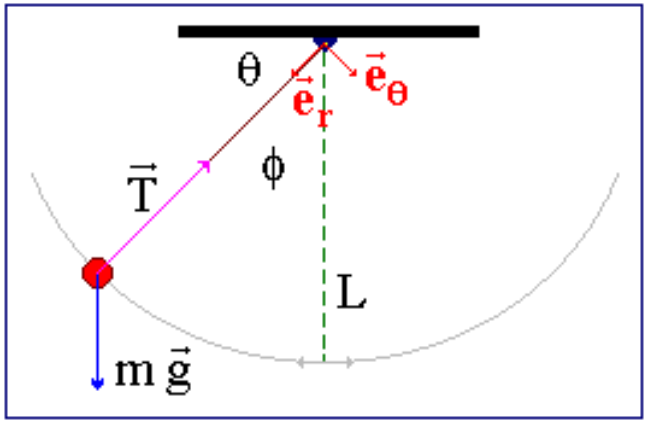
$$\ddot{\phi} = -\left(\frac{g}{L}\right)\phi$$

$$\ddot{x} = -\frac{k}{m}\,x$$

Péndulo

$$\vec{e}_r \rangle \quad mg\,\mathrm{sen}\,\theta - T = -mL\dot{\theta}^2$$

$$\vec{e}_\theta \rangle \quad mg\cos\theta = mL\ddot{\theta}$$



$$\mathrm{sen}\,\phi \cong \phi$$

$$\ddot{\phi} = -\left(\frac{g}{L}\right)\phi$$

$$\phi = \phi_\circ \cos(wt)$$

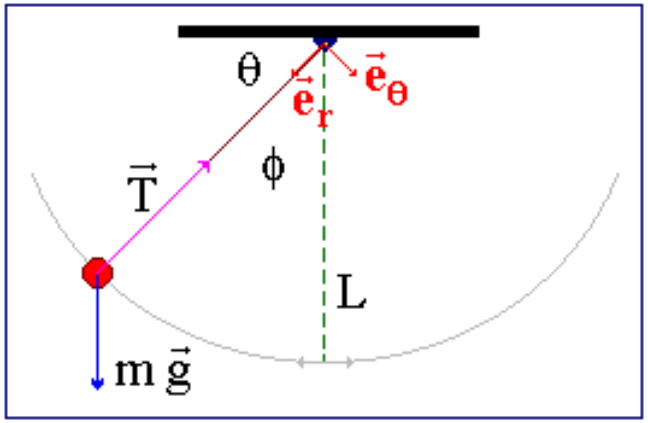
$$T = 2\pi\sqrt{\frac{L}{g}}$$

$$w = \sqrt{\frac{g}{L}}$$

Péndulo real

$$\vec{e}_r \rangle \quad mg\,\mathrm{sen}\,\theta - T = -mL\dot{\theta}^2$$

$$\vec{e}_\theta \rangle \quad mg\cos\theta = mL\ddot{\theta}$$



$$\ddot{\phi} = -\left(\frac{g}{L}\right)\mathrm{sen}\,\phi$$

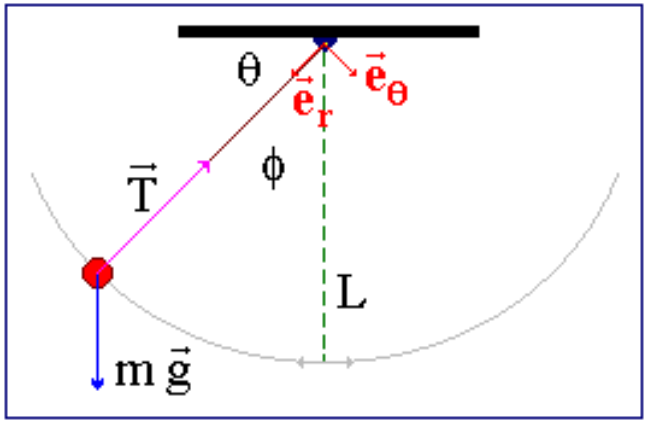
$$T = 2\pi\left(\frac{L}{g}\right)^{\frac{1}{2}}\left(1+\frac{1}{4}k^2+\frac{9}{64}k^4+\ldots\ldots\ldots\right)$$

$$k = \mathrm{sen}\left(\frac{\phi_\circ}{2}\right)$$

Péndulo real

$$\vec{e}_r \rangle \quad mg\,\mathrm{sen}\,\theta - T = -mL\dot{\theta}^2$$

$$\vec{e}_\theta \rangle \quad mg\cos\theta = mL\ddot{\theta}$$



$$\ddot{\phi} = -\left(\frac{g}{L}\right)\mathrm{sen}\,\phi$$

$$T = 2\pi\left(\frac{L}{g}\right)^{\frac{1}{2}}\left(1+\frac{1}{4}k^2+\frac{9}{64}k^4+\ldots\ldots\ldots\right)$$

Pequeñas oscilaciones

$$\mathrm{sen}\,\phi \cong \phi$$

$$T = 2\pi\left(\frac{L}{g}\right)^{\frac{1}{2}}\left(1+\frac{1}{16}\phi_\circ^2+\frac{9}{1024}\phi_\circ^4+\ldots\ldots\ldots\right)$$

$$T = 2\pi\sqrt{\frac{L}{g}}$$