

Alcance

$$y = y_o + v_o t + \frac{1}{2} a t^2$$

$$\Leftrightarrow y = h + 0t + \frac{1}{2} g t^2$$

$$\Leftrightarrow y = h + \frac{1}{2} g t^2$$

$$\Leftrightarrow 0 = h + \frac{1}{2} g t^2$$

$$\Leftrightarrow t = \sqrt{\frac{2h}{g}}$$

$$x = x_o + v_o t + \frac{1}{2} a t^2$$

$$\Leftrightarrow x = 0 + v_o t + \frac{1}{2} 0 t^2$$

$$\Leftrightarrow x = v_o t$$

$$\Leftrightarrow x = v_o \sqrt{\frac{2h}{g}}$$

Aceleração num movimento circular uniforme

$$a = \frac{v^2}{r}$$

$$\Leftrightarrow a = \frac{\left(\frac{2\pi r}{T}\right)^2}{r}$$

$$\Leftrightarrow a = \left(\frac{2\pi r}{T}\right)^2 \times \frac{1}{r}$$

$$\Leftrightarrow a = \left(\frac{2\pi}{T}\right)^2 \times \frac{r^2}{r}$$

$$\Leftrightarrow a = \omega^2 \times r$$

Velocidade

$$F_g = F_c$$

$$\Leftrightarrow G \frac{m_T \times m_c}{r^2} = m_c \times a_c$$

$$\Leftrightarrow G \frac{m_T \times m_c}{r^2} = m_c \times \frac{v^2}{r}$$

$$\Leftrightarrow G \frac{m_T}{r^2} = \frac{v^2}{r}$$

$$\Leftrightarrow G \frac{m_T}{r} = v^2$$

$$\Leftrightarrow v = \sqrt{\frac{G \times m_T}{r}}$$

Coeficiente de restituição

$$\begin{aligned} & \frac{E_{mi} - E_{mf}}{E_{mi}} \\ &= 1 - \frac{E_{mf}}{E_{mi}} \\ &= 1 - \frac{mgh_{após}}{mgh_{queda}} \\ &= 1 - \frac{h_{após}}{h_{queda}} \\ &= 1 - e^2 \end{aligned}$$

Densidade de um gás

$$\rho = \frac{m}{V}$$

$$\Leftrightarrow \rho = \frac{n \times M}{n \times V_m}$$

$$\Leftrightarrow \rho = \frac{M}{V_m}$$