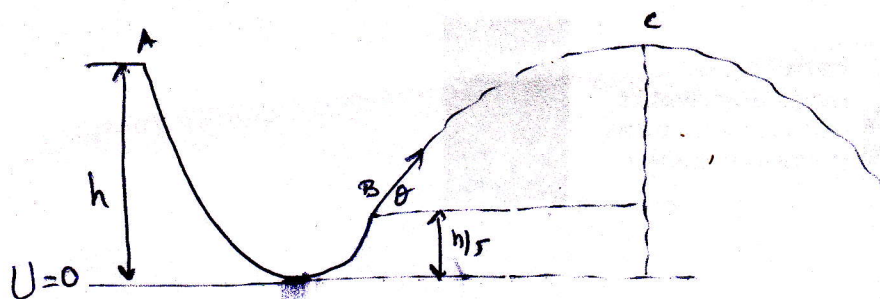


exercício 5 Pauta

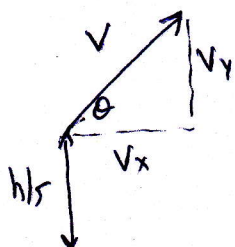


cons. de energia AB

$$Mgh = Mgh/5 + \frac{1}{2}Mv^2$$

$$\boxed{v^2 = \frac{8gh}{5}} \quad (1)$$

largura do projétil:



$$\begin{aligned} x &= v \cos \theta t \\ y &= \frac{h}{5} + v \sin \theta t - \frac{1}{2}gt^2 \end{aligned} \quad (2)$$

$$v_y = v \sin \theta - gt \quad v_y = 0 \text{ em C.}$$

$$\boxed{t = \frac{v \sin \theta}{g}} \quad (3) \text{ reempl. em (2)}$$

$$y = \frac{h}{5} + v \sin \theta \cdot \frac{v \sin \theta}{g} - \frac{1}{2}g \left(\frac{v \sin \theta}{g} \right)^2$$

$$y = \frac{h}{5} + \frac{1}{2} \frac{v^2 \sin^2 \theta}{g} \quad \text{reemplazando (1)}$$

$$y = \frac{h}{5} + \frac{1}{2} \frac{8gh \sin^2 \theta}{5g} = \frac{h}{5} + \frac{h}{5} \cdot 4 \sin^2 \theta$$

$$\boxed{y = \frac{h}{5} (1 + 4 \sin^2 \theta)}$$

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