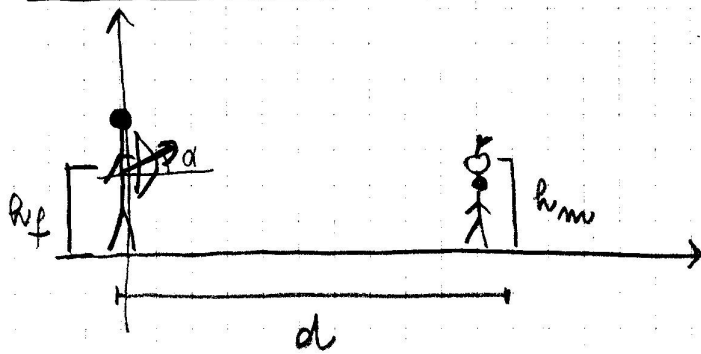


Esercizio del Guglielmo Tell



v_0

Che angolo α devo mettere?

$$\begin{cases} x = v_0 \cos \alpha t \\ y = v_0 \sin \alpha t - \frac{1}{2} g t^2 + h_f \end{cases}$$

$$d = v_0 \cos \alpha t \quad t = \frac{d}{v_0 \cos \alpha}$$

$$h_m = v_0 \sin \alpha \frac{d}{v_0 \cos \alpha} - \frac{1}{2} g \frac{d^2}{v_0^2 \cos^2 \alpha} + h_f$$

$$h_m - h_f = d \tan \alpha - \frac{g d^2}{2 v_0^2 \cos^2 \alpha}$$

$$\cos^2 \alpha = \frac{1}{1 + \tan^2 \alpha}$$

$$\frac{h_m - h_f}{h} = d \tan \alpha - \frac{g d^2}{2 v_0^2} (1 + \tan^2 \alpha)$$

$$h = d \tan \alpha - \frac{g d^2}{2 v_0^2} - \frac{g d^2}{2 v_0^2} \tan^2 \alpha$$