

A ball is thrown upward with an initial horizontal velocity of 8 m/s ,and an initial vertical veocity of 40 m/s

find V_0 (V knot)

find the position and velociy of the ball after 2.5 secs

find th and h

find tr and r

Solution

$$V_0 = \sqrt{V_{0y}^2 + V_{0x}^2} = \sqrt{40^2 + 8^2} = 40.8 \frac{m}{s}$$

$$h(t) = V_{0y}t - \frac{gt^2}{2}$$

$$r(t) = V_{0x}t$$

$$\text{for } t=2.5 \text{ s: } h = 40 * 2.5 - 0.5 * 10 * 2.5^2 = 68,75 \text{ m}$$

$$r = 8 * 2.5 = 20m$$

$$\begin{aligned} V_y(2.5) &= 40 - 10 * 2.5 = 15 \frac{m}{s}; V_x = 8 \frac{m}{s}; V = \sqrt{V_y^2 + V_x^2} = \sqrt{15^2 + 8^2} \\ &= 17 \frac{m}{s} \end{aligned}$$

$$h_{max} = 80m$$

$$r_{max} = 32m$$