

1. A round is launched straight up at 460 m/s. How high will it be to the apex?

Solution

Initial velocity $V_0=460$ m/s. Final velocity is zero when round is at the apex.

We may find the time it takes to reach its highest point:

$$0 = V_0 - g \cdot t \rightarrow t = \frac{V_0}{g} = \frac{460}{9.8} = 46.94 \text{ s.}$$

Maximum height is:

$$H = V_0 \cdot t + \frac{g \cdot t^2}{2} = 460 \cdot 46.94 + \frac{-9.8 \cdot 46.94^2}{2} = 10796 \text{ m.}$$

Answer 10796 m.