

Question 15372

The initial velocity is $v_0 = 0 (v_{0x} = 0, v_{0y} = 0)$. The acceleration is

$a_x = a \cos \varphi, a_y = a \sin \varphi, a = 2, \varphi = 5.5 \text{ degrees}$. Hence, the horizontal and vertical displacements are $S_x = \frac{a_x t^2}{2} = \frac{a \cos \varphi t^2}{2}, S_y = \frac{a_y t^2}{2} = \frac{a \sin \varphi t^2}{2}$, and are equal to $S_x \approx 143.34 \text{ m}, S_y \approx 13.8 \text{ m}$.