

**Physics 3500**  
**Weekly Quiz 4**

A golf ball is struck at an angle of  $30^\circ$  with an initial speed of  $v_0$ . After 1 second, the ball is observed to be at a vertical height of 5 meters. (assume negligible air resistance)

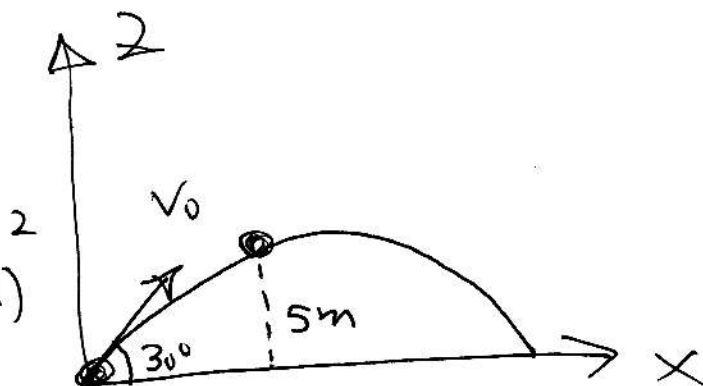
- a) Calculate the initial speed  $v_0$ .

$$z = v_{0z}t - \frac{1}{2}gt^2$$

$$\downarrow \quad \downarrow$$
$$5 = (v_0 \sin 30^\circ)(1) - \frac{1}{2}(9.8)(1)$$

$$5 = \frac{1}{2}v_0 - 4.9 \rightarrow$$

$$v_0 = 19.8 \text{ m/s}$$



- b) Calculate the horizontal distance traveled during this time of  $t = 1$  s.

$$x = v_{0x}t = (v_0 \cos 30^\circ)t$$

$$x = (19.8)(\cos 30^\circ)(1)$$

$$x = 17.1 \text{ m}$$