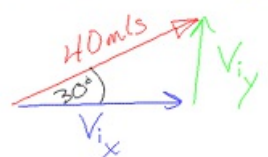


A golf ball is driven from level ground with an initial velocity of 40 m/s at an angle of 30° above the horizon.

Find:

- a) max height of ball's path (first half - up)
 - b) hangtime
 - c) range
 - d) impact velocity
- } whole trajectory

	$\frac{x}{}$ $V_i = 34.6 \text{ m/s}$ $a = 0$	$\frac{y}{}$ $V_i = 20 \text{ m/s}$ $a = -9.8 \text{ m/s}^2$ $\Delta y = ?$ $V_{fy} = 0$
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$$V_f^2 = V_i^2 + 2a(\Delta y)$$

$$0 = 20^2 + 2(-9.8)(\Delta y)$$

$$-400 = -19.6(\Delta y)$$

$$\underline{20.4 \text{ m} = \Delta y = h_{\text{max}}}$$

b) $\frac{x}{}$ $\frac{y}{}$
 $a = 0$ $a = -9.8 \text{ m/s}^2$

$$V_i = 34.6 \text{ m/s} \quad V_i = 20 \text{ m/s}$$

$$\Delta x = ? \quad \Delta y = 0$$

$$t = ? \quad \Delta y = V_i t + \frac{1}{2} a t^2$$

$$V_{fy} = ? \quad 0 = 20t - 4.9t^2$$

$$\underline{t = 4.08 \text{ s}}$$

$$\Delta x = V_i t + \frac{1}{2} a t^2$$

$$\Delta x = 34.6(4.08) + 0$$

$$\underline{\Delta x = 141 \text{ m}}$$

$$V_{fx} = ? \quad V_{fx} = 34.6 \text{ m/s}$$

$$V_{fy} = V_{iy} + a_y t$$

$$= 20 + (-9.8)(4.08)$$

$$V_{fy} = -20 \text{ m/s}$$

