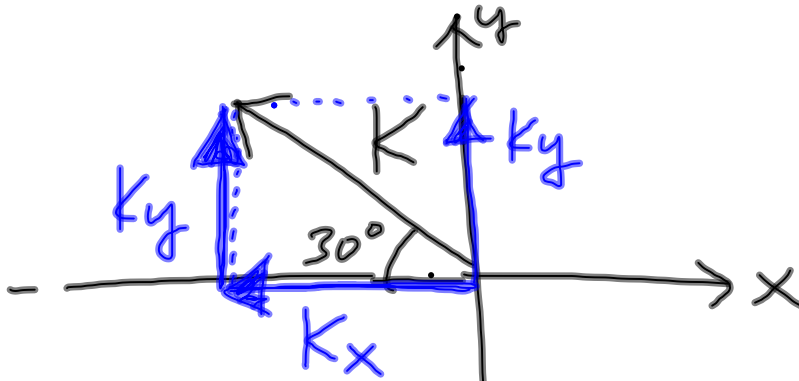


Vector components are vectors!

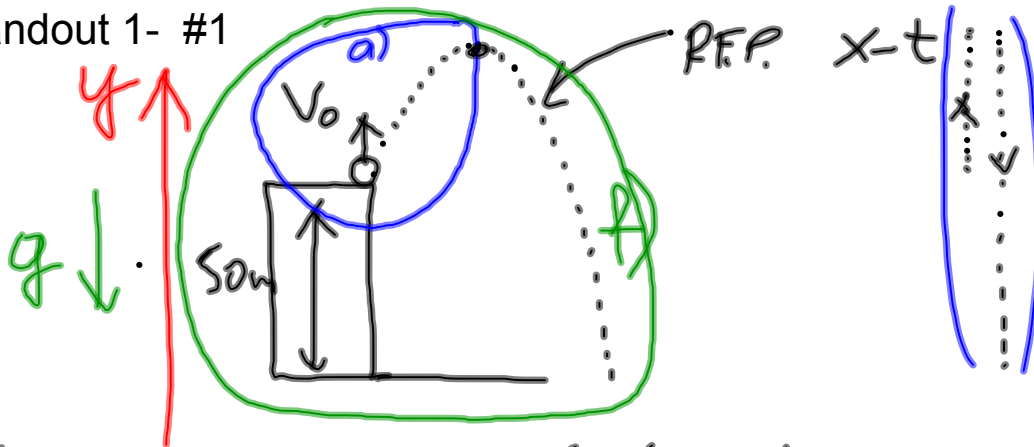


$$K_x = K \cdot \cos 30^\circ = - \boxed{\#}$$

$$K_y = K \cdot \sin 30^\circ = + \boxed{\#}$$

Oct 10-8:04 AM

Handout 1- #1



a) $V_0 = 20 \frac{\text{m}}{\text{s}}$
 $v = 0$
 $g = -9.8 \frac{\text{m}}{\text{s}^2}$
 $t = ?$
 $\Delta y = ?$

$$V = V_0 + gt$$

$$t = 2.04 \text{ s}$$

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$$b) \quad \Delta y = \frac{1}{2}(V_0 + V)t$$

$$\Delta y_{\text{max}} = 20.4 \text{ m}$$

ABOVE THE GROUND $d = \Delta y_{\text{max}} + 50 \text{ m}$

$$c) \quad t \text{ FROM PART a) } \times 2 = \underline{5}$$

d) $V = -20 \frac{\text{m}}{\text{s}}$. SINCE $\Delta y = 0$ AT THAT POINT, MOTION IS SYMMETRICAL.

Oct 10-8:22 AM

$$e) \quad V = V_0 + gt$$

$$V = 20 - 9.6(5)$$

$$\underline{V = -29 \frac{\text{m}}{\text{s}}}$$

$$\Delta y = \frac{1}{2}(V_0 + V)t$$

$$\Delta y = \frac{1}{2}(20 - 29)(5)$$

$$\underline{\Delta y = -22.5 \text{ m}}, \text{ so } y = 22.5 \text{ m BELOW ROOFTOP.}$$

Oct 10-8:31 AM

f) NEW PROBLEM (IN GREEN ON A SKETCH)

↳ NEW LIST

$$V_0 = 20$$

$$V = ?$$

$$g = -9.8 \frac{m}{s^2}$$

$$t = ?$$

$$\boxed{\Delta y = -50 m} !!$$

$$\Delta y = \frac{V^2 - V_0^2}{2g}$$

$$-50 = \frac{V^2 - 20^2}{2(-9.8)}$$

$$\boxed{V = -37.1 \frac{m}{s}}$$

BASED ON SKETCH

Oct 10-8:35 AM

g) TOTAL TIME IN THE AIR = HANG TIME.
SAME PROBLEM AS f)

$$V = V_0 + gt$$

$$-37.1 = 20 - 9.8t$$

$$\boxed{t = 5.83 s}$$

Oct 10-8:38 AM