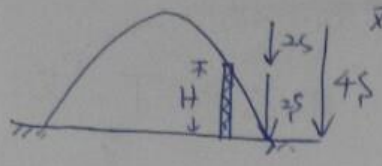
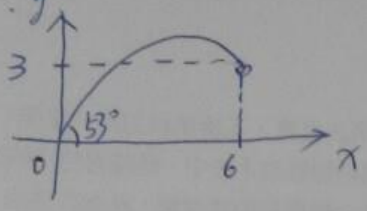
1.

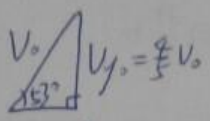


对称性: $\frac{6+2}{2}=4$

$\therefore$ 塔高 $H=\frac{1}{2}\cdot 10\cdot(4^2-2^2)=60(m)$ ✱

2.

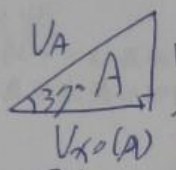


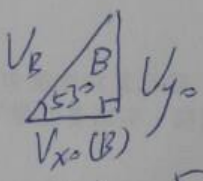


$$\begin{cases} x: \frac{3}{5}V_0 t=6 & \cdots ① \\ y: \frac{4}{5}V_0 t-\frac{1}{2}\times 10\times t^2=3 & \cdots ② \end{cases}$$

由①代入② $\frac{4}{3}\times 6-5t^2=3$ $\therefore t=1(s)$ #

3.





由图知 $V_A=\frac{5}{3}V_{y_0}$ $V_B=\frac{5}{4}V_{y_0}$ $V_{x_0(A)}=\frac{4}{3}V_{y_0}$ $V_{x_0(B)}=\frac{3}{4}V_{y_0}$

(1) $\therefore V_A:V_B=\frac{5}{3}:\frac{5}{4}=4:3$ ✱

(2) $\because V_{y_0}$ 相同 $\therefore$ 全程歷時 T 相同

$\therefore$ 水平射程 $R=V_{x_0}\cdot T\propto V_{x_0}$

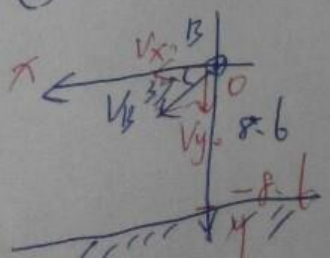
$\rightarrow R_A:R_B=V_{x_0(A)}:V_{x_0(B)}=\frac{4}{3}:\frac{3}{4}=16:9$ #

4. (1) A→B: 光滑斜面等加速度直線運動 $a=g\sin 37^\circ=6$

$[\circ x=V_0 t+\frac{1}{2}at^2]$ $3=\frac{1}{2}\times 6\times t_{AB}^2$ $\therefore t_{AB}=1(s)$ #

(2) B→C: 斜向下拋 $V_B=at_{AB}=6\times 1=6(m/s)$

$V_{y_0}=V_B\sin 37^\circ=6\times\frac{3}{5}=\frac{18}{5}(m/s)$



y: $[\circ x=V_0 t+\frac{1}{2}at^2]$ $8.6=\frac{18}{5}t_{BC}+\frac{1}{2}\times 10\times t_{BC}^2$

$25t_{BC}^2+18t_{BC}-43=0$

$\therefore t_{BC}=1(s)$ #