

④ $\phi = 135 \text{ m} \Rightarrow r = 67.5$ $t = 12 \text{ h} = 43200 \text{ s}$

$$\omega = \frac{2\pi \text{ rad}}{30 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ s}} = 0.001 \text{ M rad/s}$$

$$v = \omega \cdot r = 0.001 \text{ M rad/s} \cdot 67.5 \text{ m/rad} = 0.23 \text{ m/s}$$

$$\varphi = 0.001 \text{ M rad/s} \cdot 43200 \text{ s} = 43.2 \text{ rad}$$

$$s = 0.23 \text{ m/s} \cdot 43200 \text{ s} = 9936 \text{ m}$$

⑤ No se puede hacer

⑥ $v_0 = 0$
 $t = 4 \text{ s}$
 $g = 9.81$

$$s = \cancel{v_0} + \cancel{v_0} t + \frac{1}{2} g t^2$$

$$s = \frac{1}{2} 9.81 \cdot 4^2 = 78.5 \text{ m}$$

⑦ $h = 300 \text{ m}$
 $v_0 = 10 \text{ m/s}$
 $g = 9.81 \text{ m/s}^2$

$$v_f^2 = v_0^2 + 2gs = 10^2 + 2 \cdot 9.81 \cdot 300$$

$$v_f = \sqrt{10^2 + 2 \cdot 9.81 \cdot 300} = 77.4 \text{ m/s}$$

$$v_f = v_0 + gt \Rightarrow 77.4 = 10 + 9.81 \cdot t$$

$$t = \frac{77.4 - 10}{9.81} = 6.7 \text{ s}$$

$$\textcircled{8} \quad v_0 = 30 \text{ m/s}$$

$$v_f = 45 \text{ m/s}$$

$$v_f = v_0 + g t$$

$$45 = 30 + 9.81 \cdot t$$

$$t = \frac{45 - 30}{9.81} = \underline{\underline{1.5 \text{ s}}}$$

$$s = \cancel{s_0}^0 + v_0 \cdot t + \frac{1}{2} g t^2 = 30 \cdot 1.5 + \frac{1}{2} \cdot 9.81 \cdot 1.5^2 = \underline{\underline{56 \text{ m}}}$$

$$v_f = v_0 + g t = 45 + 9.81 \cdot 1.0 = \underline{\underline{143.1 \text{ m/s}}}$$