

TAREA No. 8.

① $y = 80 \text{ m}$ $v_{0x} = 30 \text{ m/s}$ $g = 9.8 \text{ m/s}^2$

$$t = \sqrt{\frac{2y}{g}}$$

$$t = \sqrt{\frac{(2)(80 \text{ m})}{9.8 \text{ m/s}^2}}$$

$$t = \sqrt{16.33 \text{ seg}^2}$$

$$t = 4.04 \text{ seg}$$

$$x = v_{0x} t$$

$$x = 30 \text{ m/s} \times 4.04 \text{ seg}$$

$$x = 121.2 \text{ m}$$

$$v_x = v_{0x}$$

$$v_{0x} \quad v_x = 30 \text{ m/s} \quad \text{componente horizontal}$$

$$v_y = gt$$

$$v_y = 9.8 \text{ m/s}^2 \times 4.04 \text{ seg}$$

$$v_y = 39.59 \text{ m/s}$$

$$v_R = \sqrt{(30 \text{ m/s})^2 + (39.59 \text{ m/s})^2}$$

$$v_R = \sqrt{2467.37 \text{ m}^2/\text{s}^2}$$

$$v_R = 49.67 \text{ m/s}$$

$$(2) \quad V_{0x} = 198 \text{ km/h} \quad y = 312 \text{ m} \quad g = 9.8 \text{ m/s}^2$$

$$t = \sqrt{\frac{2y}{g}}$$

$$t = \sqrt{\frac{(2)(312 \text{ m})}{9.8 \text{ m/s}^2}}$$

$$t = \sqrt{63.67 \text{ seg}^2}$$

$$t = 7.98 \text{ seg}$$

$$x = V_{0x} t$$

$$198 \text{ km/h} = \frac{1000}{1 \text{ km}} = \frac{1 \text{ h}}{3600} = \frac{198,000}{3600}$$

$$x = 55 \text{ m/s} \times 7.98 \text{ seg}$$

$$x = 438.9 \text{ m}$$

$$(3) \quad V_{0x} = 80 \text{ m/s} \quad y = 120 \text{ m} \quad g = 9.8 \text{ m/s}^2$$

$$t = \sqrt{\frac{2y}{g}}$$

$$t = \sqrt{\frac{(2)(120 \text{ m})}{9.8 \text{ m/s}^2}}$$

$$t = \sqrt{24.49 \text{ seg}^2}$$

$$t = 4.95 \text{ seg}$$

$$x = V_{0x} t$$

$$x = 80 \text{ m/s} \times 4.95 \text{ seg}$$

$$x = 396 \text{ m}$$

$$(4) \quad y = 1400 \text{ m} \quad v_{0x} = 140 \text{ m/s} \quad g = 9.8 \text{ m/s}^2$$

$$t = \sqrt{\frac{2y}{g}}$$

$$t = \sqrt{\frac{2(1400 \text{ m})}{9.8 \text{ m/s}^2}}$$

$$t = \sqrt{285.71 \text{ seg}^2}$$

$$t = 16.90 \text{ seg}$$

$$x = v_{0x} t$$

$$x = 140 \text{ m/s} \times 16.90 \text{ seg}$$

$$x = 2.366 \text{ m/s}$$

$$v_R = \sqrt{(v_x)^2 + (v_y)^2} = 1 \quad \text{Altura} = 20 \text{ m} \quad (5)$$

$$v_x = v_{0x}$$

$$v_y = gt$$

$$v_y = 9.8 \text{ m/s}^2 \times 16.90 \text{ seg}$$

$$v_y = 165.62 \text{ m/s}$$

$$v_R = \sqrt{(140 \text{ m/s})^2 + (165.62 \text{ m/s})^2}$$

$$v_R = \sqrt{47,029.98 \text{ m}^2/\text{seg}^2}$$

$$v_R = 216.86 \text{ m/s}$$

$$5) \quad t_v = 2 t_s$$

$$V_{oy} = (20 \text{ m/s}) (\sin 50^\circ)$$

$$V_{oy} = 15.32 \text{ m/s}$$

$$t_s = \frac{V_{oy}}{g}$$

$$t_s = \frac{15.32 \text{ m/s}}{9.8 \text{ m/s}^2}$$

$$t_s = 1.56 \text{ seg}$$

$$t_v = 2(1.56 \text{ seg})$$

$$t_v = 3.12 \text{ seg}$$

$$H_{\max} = \frac{(V_{oy})^2}{2g}$$

$$H_{\max} = \frac{(15.32 \text{ m/s})^2}{2(9.8 \text{ m/s}^2)}$$

$$H_{\max} = 11.97 \text{ m}$$

$$x = V_{ox} t_v$$

$$V_{ox} = (20 \text{ m/s}) (\cos 50^\circ)$$

$$V_{ox} = 12.86 \text{ m/s}$$

$$x = 12.86 \text{ m/s} \times 3.12 \text{ seg}$$

$$x = 40.12 \text{ m}$$

$$V_{0y} = (20 \text{ m/s}) (\sin 40^\circ)$$

$$V_{0y} = 12.86 \text{ m/s}$$

$$t_s = \frac{V_{0y}}{g}$$

$$t_s = \frac{12.86 \text{ m/s}}{9.8 \text{ m/s}^2}$$

$$t_s = 1.31 \text{ seg}$$

$$t_v = 2t_s$$

$$t_v = (2) 1.31 \text{ seg}$$

$$t_v = 2.62 \text{ seg}$$

$$V_{0x} = (20 \text{ m/s}) (\cos 40^\circ)$$

$$V_{0x} = 15.32 \text{ m/s}$$

$$x = V_{0x} t_v$$

$$x = 15.32 \text{ m/s}$$

$$x = 40.13 \text{ m}$$

$$⑤ \quad V_{0x} = (30 \text{ m/s}) (\cos 40^\circ) = 22.98 \text{ m/s}$$

$$V_{0y} = 19.28 \text{ m/s}$$

$$t_s = \frac{V_{0y}}{g}$$

$$t_s = \frac{19.28 \text{ m/s}}{9.8 \text{ m/s}^2}$$

$$t_s = 1.97 \text{ seg}$$

$$t_v = 2 t_s$$

$$t_v = (2)(1.97 \text{ seg})$$

$$t_v = 3.94 \text{ seg}$$

$$H_{\max} = \frac{(V_{0y})^2}{g}$$

$$H_{\max} = \frac{(19.28 \text{ m/s})^2}{(2)(9.8 \text{ m/s}^2)}$$

$$H_{\max} = 18.97 \text{ m}$$

$$x = V_{0x} t_v$$

$$V_{0x} = (30 \text{ m/s}) (\cos 40^\circ)$$

$$V_{0x} = 22.98 \text{ m/s}$$

$$x = 22.98 \text{ m/s} \times 3.94 \text{ seg}$$

$$x = 90.54 \text{ m}$$

⑦ $v_t = 10 \text{ m/s}$ $r = 50 \text{ m}$ $a_c = ?$

$$a_c = \frac{(v_t)^2}{R}$$

$$a_c = \frac{(10 \text{ m/s})^2}{50 \text{ m}}$$

$$a_c = 2 \text{ m/s}^2$$

⑧ $v_t = 30 \text{ m/s}$ $r = 0.40 \text{ m}$ $\omega = ?$

$$\omega = \frac{v_t}{r}$$

$$\omega = \frac{30 \text{ m/s}}{0.40 \text{ m}}$$

$$\omega = 75 \text{ rad/s}$$

⑨ $r = 10 \text{ cm}$ $T = 4.2525$

$$v_t = \frac{2 \pi r}{T}$$

$$v_t = \frac{2(3.1416)(10 \text{ m})}{4.2525}$$

$$v_t = 0.014 \text{ s}$$

10

$$n = 10 \text{ cm}$$

$$t = 4,252$$

$$T = t n$$

$$T = \frac{4,252}{10}$$

$$T = 425.25.$$