

Problemas Semana 22

1) $\theta = 40^\circ$ $U_0 = 9 \text{ m/s}$ $y = 30 \text{ m}$

$$U_{0x} = -9 \text{ m/s} \cdot \cos 40^\circ = 6.89 \text{ m/s}$$

$$U_{0y} = -9 \text{ m/s} \cdot \sin 40^\circ = 5.79 \text{ m/s}$$

$$t_s = \frac{U_y - U_{0y}}{-g} \quad t_s = \frac{-5.79 \text{ m/s}}{-9.8 \text{ m/s}^2}$$

$$t_s = 0.59 \text{ seg}$$

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

$$t_c = \frac{\sqrt{63.42 \text{ m}}}{9.8 \text{ m/s}}$$

$$t_c = \sqrt{6.47 \text{ s}}$$

$$t_c = 2.54 \text{ s}$$

$$H_{\max} = \frac{U_{0y}^2}{2 \times 9.8 \text{ m/s}^2}$$

$$H_{\max} = 1.71 \text{ m}$$

$$x = U_{0x} \cdot t_u = t_u = t_s + t_c =$$

$$t_u = 3.13 \text{ seg} \quad x = 6.89 \text{ m/s} \cdot 3.13 \text{ seg}$$

$$x = 21.57 \text{ m}$$

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$$t_s = 0.59 \text{ seg} \quad t_c = \sqrt{\frac{2y}{g}}$$

$$t_c = \sqrt{\frac{63.42 \text{ m}}{9.8 \text{ m/s}^2}} \quad t_c = \sqrt{6.47 \text{ s}}$$

$$t_c = 2.54 \text{ s}$$

$$H_{\max} = \frac{U_{0y}^2}{2 \times 9.8 \text{ m/s}^2}$$

$$H_{\max} = 1.71 \text{ m}$$

$$x = U_{0x} \cdot t_v = t_v = t_s + t_c =$$

$$t_v = 3.13 \text{ seg} \quad x = 6.89 \text{ m/s} \cdot 3.13 \text{ seg}$$

$$x = 21.57 \text{ m}$$

$$2) \quad \theta = 37^\circ \quad U_0 = 20 \text{ m/s}$$

$$U_{0x} = 15.97 \text{ m/s}$$

$$U_{0y} = 12.04 \text{ m/s}$$

$$c) \quad t_{\text{max}} = \frac{U_y - U_{0y}}{2g} \quad H_{\text{max}} = \frac{0^2 - 12.04^2}{-19.6 \text{ m/s}^2}$$

$$H_{\text{max}} = \frac{144.96 \text{ m}^2/\text{s}^2}{-19.6 \text{ m/s}^2}$$

$$a) \quad H_{\text{max}} = 7.40 \text{ m}$$

$$t_s = U_{0y} \div g$$

$$t_u = t_s \cdot 2$$

$$t_s = 1.23 \text{ seg}$$

$$b) \quad t_u = 2.46 \text{ seg}$$

$$X = U_{0x} \cdot t_u$$

$$X = 15.97 \text{ m/s} \cdot 2.46 \text{ s}$$

$$c) \quad X = 39.29 \text{ m}$$

$$3) \theta = 50^\circ \quad U_0 = 20 \text{ m/s}$$

$$U_{0x} = 12.86 \text{ m/s}$$

$$U_{0y} = 15.32 \text{ m/s}$$

$$H_{\max} = \frac{U_0^2 - U_{0y}^2}{2g} \quad H_{\max} = \frac{0^2 - 15.32^2}{2g}$$

$$H_{\max} = \frac{234.70 \text{ m}^2/\text{s}^2}{19.6 \text{ m/s}^2}$$

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

$$t_s = U_{0y} / g \quad t_s = 1.56 \text{ s}, \quad t_v = 2t_s$$

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

$$X = U_{0x} \cdot t_v$$

$$c) X = 40.12 \text{ m}$$

$$4) \theta = 50^\circ \quad V_0 = 20 \text{ m/s}$$

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

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

$$t_s = 1.56 \text{ seg} \quad t_v = 2t_s \quad t_v = 3.12 \text{ s}$$

$$H_{\max} = 11.97 \text{ m} \quad x = V_{0x} \cdot t_v \quad x = 40.12 \text{ m}$$

Con ángulo de 40°

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

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

$$t_s = V_{0y} \div g \quad t_s = 1.31 \text{ s} \quad t_v = 2t_s$$

$$t_v = 2.62 \quad x = 40.13 \text{ m}$$

sl @ 40

$U_0 = 30 \text{ m/s}$

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

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

$$t_s = U_{0y} \div g = 1.97 \text{ s} \quad a = t_u = 3.94$$

$$b = t_s = 1.97 \text{ s}$$

$$H_{\max} U_y^2 = U_{0y}^2$$

$$H_{\max} = \frac{371.72 \text{ m}^2/\text{s}^2}{19.6 \text{ m/s}^2} \quad 2g$$

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

$$x = U_{0x} \cdot t_{ud} = x = 90.54 \text{ m}$$

$$\theta = 45^\circ$$

$$v_0 = 40 \text{ m/s}$$

$$v_{0x} = 28.28 \text{ m/s}$$

$$v_{0y} = 28.28 \text{ m/s}$$

$$t_s = 2.89 \text{ s} \quad a = -g = -9.8 \text{ m/s}^2$$

$$H_{\max} = \frac{v_y^2 - v_{0y}^2}{2g}$$

$$H_{\max} = \frac{799.76}{19.6}$$

$$H_{\max} = 40.80 \text{ m} \quad C = X = 1163.46 \text{ m}$$