

Semana 4

$$11a) v_{ox} = (9 \text{ m/s}) (\cos 40^\circ) = 6.89 \text{ m/s}$$
$$v_{oy} = (9 \text{ m/s}) (\sin 40^\circ) = 5.79 \text{ m/s}$$

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

$$t_s = \frac{5.79 \text{ m/s}}{9.8 \text{ m/s}^2} = 0.59 \text{ seg}$$

$$H_{\text{max}} = \frac{v_{oy}^2}{2g}$$

$$H_{\text{max}} = \frac{(5.79 \text{ m/s})^2}{2 \cdot 9.8 \text{ m/s}^2} = 1.71 \text{ m}$$

$$y = 1.71 \text{ m} + 30 \text{ m/s} = 31.71 \text{ m/s}$$

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

$$t_c = \frac{\sqrt{2(31.71 \text{ m})}}{9.8 \text{ m/s}^2} = 2.54$$

$$t_v = t_s + t_c$$

$$t_v = 0.59 \text{ sec} + 2.54 = 3.13 \text{ s}$$

$$x = v_0 t_v$$

$$v = (6.20 \text{ m/s}) (3.13 \text{ sec})$$

$$v = 27.87 \text{ m/s}$$

2) a) $v_{0y} = 12.03 \text{ m/s}$ (from 77°) 12.03 m/s

$$t_{\text{max}} = \frac{v_{0y}}{g}$$

$$H_{\text{max}} = \frac{v_{0y}^2}{2g} = \frac{(12.03 \text{ m/s})^2}{2 \cdot 9.8 \text{ m/s}^2}$$

$$H_{\text{max}} = 7.38 \text{ m} \leftarrow$$

$$b) t_s = \frac{v_{0y}}{g}$$

$$t_s = \frac{12.03 \text{ m/s}}{9.8 \text{ m/s}^2} = 1.23 \text{ s}$$

$$t_u = 2t_s$$

$$t_u = 2(1.23 \text{ s}) = t_u = 2.46 \text{ s}$$

$$c) v_{0y} = (20 \text{ m/s}) (\cos 33^\circ) 13.98 \text{ m/s}$$

$$v_{0y} \neq 0$$

$$y = (15.92 \text{ m/s}) (2.40 \text{ s})$$

$$y = 39.24 \text{ m/s}$$

$$3) a) v_{0y} = (20 \text{ m/s}) \sin 50^\circ 15.32 \text{ m/s}$$

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

$$t_s = \frac{15.32 \text{ m/s}}{9.8 \text{ m/s}^2} = 1.56 \text{ s}$$

$$t_u = 2 (1.56 \text{ s})$$

$$t_u = 3.12 \text{ s}$$

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

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

$$H_{max} = 11.93 \text{ m}$$

$$C_{vov} = (20 \text{ m/s}) (\cos 50^\circ) = 12.56 \text{ m/s}$$

$$x = v_{ox} \cdot t$$

$$x = (12.56 \text{ m/s}) (2.12 \text{ s})$$

$$x = 26.62 \text{ m}$$

los ejercicios a, b, c son las mismas respuestas que la del 3.

$$d) v_{oy} = (9.2 \text{ m/s}) (\sin 40^\circ) = 5.96 \text{ m/s}$$

$$t_s = \frac{12.26 \text{ m/s}}{5.96 \text{ m/s}} = 2.05 \text{ s}$$

$$t_0 = 2 + s$$

$$t_0 = 2(1.31 \text{ s}) + 2.02 \text{ s}$$

$$v_{oy} = (9.2 \text{ m/s}) (\cos 40^\circ) = 7.07 \text{ m/s}$$

$$x = v_{oy} t_0$$

$$x = (7.07 \text{ m/s}) (2.02 \text{ s})$$

$$x = 14.1 \text{ m}$$