

Semana 8

$$\textcircled{1} Y = 80 \text{ m} \quad V_{ox} = 30 \text{ m/s} \quad g = 9.8 \text{ m/s}^2$$

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

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

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

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

$$X = V_{ox} t$$

$$X = 30 \text{ m/s} * 4.04 \text{ seg}$$

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

$$V_x = V_{ox}$$

$$V_{ox} \quad V_x = 30 \text{ m/s} \text{ componente horizontal}$$

$$V_y = gt$$

$$V_y = 9.8 \text{ m/s}^2 * 4.04 \text{ seg}$$

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

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

$$V_R = \sqrt{2,467.37 \text{ m}^2/\text{s}^2}$$

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

$$\textcircled{2} \quad V_{ox} = 198 \text{ km/h} \quad Y = 312 \text{ m} \quad g = 9.8 \text{ m/s}^2$$

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

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

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

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

$$X = V_{ox} t$$

$$\frac{198 \text{ km/h}}{55 \text{ m/s}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} = \frac{1 \text{ h}}{3600} = \frac{198,000}{3,600}$$

$$X = 55 \text{ m/s} * 7.98 \text{ sec}$$

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

$$\textcircled{3} \quad V_{ox} = 80 \text{ m/s} \quad Y = 120 \text{ m} \quad g = 9.8 \text{ m/s}^2$$

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

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

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

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

$$X = V_{ox} t$$

$$X = 80 \text{ m/s} * 4.95 \text{ sec}$$

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

$$④ Y = 1400 \text{ m} \quad V_{0x} = 140 \text{ m/s} \quad g = 9.8 \text{ m/s}^2$$

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

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

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

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

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

$$X = 140 \text{ m/s} * 16.90 \text{ sec}$$

$$X = 2,366 \text{ m}$$

$$V_R = \sqrt{(V_x)^2 + (V_y)^2}$$

$$V_x = V_{0x}$$

$$V_y = gt$$

$$V_y = 9.8 \text{ m/s}^2 * 16.90 \text{ sec}$$

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

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

$$V_R = \sqrt{47,029.98 \text{ m}^2/\text{s}^2}$$

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

5

$$t_v = 2t_s$$

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

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

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

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

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

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

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

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

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

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

$$x = V_{ox} t_v$$

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

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

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

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

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

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

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

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

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

$$t_v = 2 t_s$$

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

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

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

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

$$x = V_{ox} t_v$$

$$x = 15.32 \text{ m/s} * 2.62 \text{ seg}$$

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

$$⑥ \quad V_{oy} = (30 \text{ m/s})(\sin 40^\circ)$$

$$V_{oy} = 19.28 \text{ m/s}$$

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

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

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

$$t_v = 2t_s$$

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

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

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

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

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

$$X = V_{ox} t_v$$

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

$$V_{ox} = 22.98 \text{ m/s}$$

$$X = 22.98 \text{ m/s} \times 3.94 \text{ sec}$$

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

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 $r = 10 \text{ cm}$ $T = 4,252 \text{ s}$

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

$$V_t = \frac{2(3.1416)10 \text{ m}}{4,252}$$

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

10 $n = 10 \text{ cm}$ $t = 4,252$

$$T = \frac{t}{n} \quad T = \frac{4,252}{10}$$

$$T = 425.2 \text{ s}$$