

Sema 2

1) $V_{0x} = 30 \text{ m/s}$ $V = 80 \text{ metros}$ $g = 9.8 \text{ m/s}^2$

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

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

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

$$4.04 \text{ seg}$$

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

$$X = 30 \text{ m/s} \times 4.04 = 121.2 \text{ m}$$

2) $V_{0x} = 798 \text{ Km/h}$ $Y = 312 \text{ m}$ $g = 9.8 \text{ m/s}^2$

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

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

$$t = \sqrt{63.67 \text{ s}^2} = 7.98 \text{ seg}$$

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

$$798 \times \frac{1000 \text{ m}}{3600 \text{ s}} = \frac{198,000 \text{ m}}{3600 \text{ s}} = 55 \text{ m/s}$$

$$X = 55 \text{ m/s} \times 7.98 \text{ seg} = 438.9 \text{ m}$$

3) $X = 90 \text{ m/s}$ $Y = 100 \text{ m}$ $g = 9.8 \text{ m/s}^2$

$$t = \sqrt{\frac{2(100 \text{ m})}{9.8 \text{ m/s}^2}}$$

$$t = \sqrt{20.40 \text{ m/s}^2} = 4.51 \text{ seg}$$

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

$$V_{0x} = 90 \text{ m} \div 4.51 \text{ seg} = 19.96 \text{ m/seg}$$

$$4) V_{0x} = 520 \text{ Pies/s} \quad t = 7 \text{ seg} \quad g = 32.2 \text{ Pies/s}^2$$

a) Altitud a la que vuela el avión

$$y = g t^2 \div 2$$

$$y = \frac{32.2 \text{ pies/s}^2 (7 \text{ seg})^2}{2}$$

$$y = 1577.8 \text{ pies}$$

$$y = 788.9 \text{ Pies}$$

B) Cual es su alcance horizontal

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

$$x = 520 \text{ Pies/s} \times 7 \text{ seg} = x = 3,640 \text{ pies}$$

$$5) y = 30 \text{ mt} \quad V_{0x} = 12 \text{ m/s} \quad g = 9.8 \text{ m/s}^2$$

$$a) x = ?$$

$$x = V_{0x} \times T$$

$$T = \sqrt{\frac{(2)(30 \text{ mt})}{9.8 \text{ m/s}^2}}$$

$$t = \sqrt{6.125^2} = 2.47 \text{ seg}$$

$$x = 12 \text{ m/s} \times 2.47 \text{ seg} = x = 29.64 \text{ mts}$$

$$6) V_{ox} = 90 \text{ m/s} \quad Y = 28 \text{ m} \quad g = 9.8 \text{ m/s}^2$$

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

$$t = \sqrt{\frac{(2) 28 \text{ m}}{9.8 \text{ m/s}^2}}$$

$$t = \sqrt{5.715^2} = \underline{t = 2.38 \text{ seg}}$$

$$b = X = V_{ox} T$$

$$X = 90 \text{ m/s} \times 2.38 \text{ seg} = X = 214.2$$

$$c) V_x = V_{ox} = 90 \text{ m/s}$$

$$V_y = gt$$

$$V_y = 9.8 \text{ m/s}^2 \times 2.38 \text{ s} = 23.32 \text{ m/s}$$

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

$$V_R = \sqrt{(90 \text{ m/s})^2 + (23.32 \text{ m/s})^2}$$

$$V_R = \sqrt{8,643 \text{ m}^2/\text{seg}^2} = \underline{V_R = 92.97 \text{ m/seg}}$$

$$7) Y = 1.2 \text{ metros} \quad X = 1.53 \text{ metros} \quad g = 9.8 \text{ m/s}^2$$

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

$$t = \sqrt{\frac{(2) (1.2 \text{ m})}{9.8 \text{ m/s}^2}}$$

$$t = \sqrt{0.24 \text{ seg}^2} = 0.49 \text{ seg}$$

$$V_{ox} = X \div t$$

$$V_{ox} = \frac{1.53 \text{ m}}{0.49 \text{ seg}} = \underline{V_{ox} = 3.12 \text{ m/s}}$$

$$8) \quad Y = 20 \text{ Metros} \quad X = 24 \text{ metros} \quad g = 9.8 \text{ m/s}^2$$

$$+ \sqrt{\frac{2Y}{g}}$$

$$+ \sqrt{\frac{2(20 \text{ metros})}{9.8 \text{ m/s}^2}}$$

$$+ \sqrt{4.08 \text{ seg}^2} = 2.02 \text{ seg}$$

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

$$V_{0x} = \frac{24 \text{ metros}}{2.02 \text{ seg}}$$

$$V_{0x} = 11.88 \text{ m/s}$$