

SEMANA No. 6

Problema 1.

Datos:

$$V_0 = 50 \text{ km/h}$$

$$V_f = 70 \text{ km/h}$$

$$t = 4 \text{ seg.}$$

$$50 \text{ km/h} = 13.9$$

$$70 \text{ km/h} = 19.4$$

$$\frac{19.4 \text{ m/s} - 13.9 \text{ m/s}}{4 \text{ seg.}}$$

$$1.375 \text{ m/s.}$$

Problema 2

Datos:

$$V_0 = 0$$

$$V_f = 30 \text{ km/h} = 8.3 \text{ m/s.}$$

$$t = 8 \text{ seg}$$

$$\frac{8.3 \text{ m/s} - 0}{8} = 1.0375$$

$$1.0375 \text{ m/s}$$

Problema 3.

Datos:

$$v_0 = 0$$

$$a = 0.24 \text{ m/s}^2$$

$$t = 16 \text{ seg}$$

$$x = ?$$

$$v_f = ?$$

$$v_f = 0 + 0.24 \times 16 = 3.84 \text{ m/s}$$

$$x = \left(\frac{3.84 + 0}{2} \right) 16 = 30.72 \text{ m}$$

$$\begin{aligned} \text{Velocidad} &= 3.84 \text{ m/s} \\ \text{distancia} &= 30.72 \text{ m} \end{aligned}$$

Problema 4

Datos:

$$v = 18 \text{ m/s}$$

$$a = 0.18 \text{ m/s}^2$$

$$t = 28 \text{ seg.}$$

$$v_f = v_0 + a * t$$

$$v_f = 18 \text{ m/s} + 0.18 \text{ m/s}^2 * 28 =$$

$$23.04 \text{ m/s}$$

$$x = \left(\frac{v + v_0}{2} \right) * t =$$

$$x = \frac{23.04 \text{ m/s} + 18 \text{ m/s}}{2} * 28 \text{ s} =$$

$$325.08 \text{ m.}$$

$$\begin{aligned} \text{longitud} &= 325.08 \text{ m} \\ \text{velocidad} &= 23.04 \text{ m/s} \end{aligned}$$

Problema 5

Datos :::

$$v_0 = 15 \text{ m/s}$$

$$a = 0.8 \text{ m/s}^2$$

$$x = 800 \text{ m}$$

$$v^2 = \sqrt{(15 \text{ m/s})^2 + 2 \cdot (0.8 \text{ m/s}^2) \cdot (800 \text{ m})}$$

$$v = \sqrt{225 \text{ m/s} + 1,280 \text{ s}}$$

$$v = \sqrt{1505}$$

$$v = 38.79 \text{ m/s}$$

$$t = \frac{38.79 \text{ m/s} - 15 \text{ m/s}}{0.8 \text{ m/s}^2}$$

$$29.73 \text{ s}$$

Velocidad final = 38.79 m/s.

tiempo = 29.73 s.

Problema 6

Datos:

$$v_0 = 60 \text{ km/h} - 16.67 \text{ m/s}$$

$$v_f = 0$$

$$t = -10 \text{ seg}$$

$$a = \frac{0 - 16.67 \text{ m/s}}{10 \text{ seg}} =$$

$$-1.67 \text{ m/s}^2$$

aceleración 1.67 m/s^2

Problema 7

Datos:

$$a = -3 \text{ m/s}^2$$

$$t = 20 \text{ s}$$

$$v_f = 0$$

$$v_0 = 0 - 3 \text{ m/s}^2 * 20 \text{ seg} =$$

$$v_0 = -60 \text{ m/s}$$

$$X = \left(\frac{v_f + v_0}{2} \right) t$$

$$X = \frac{0 + (-60) \cdot 20 \text{ seg}}{2} = 600 \text{ m}$$

Velocidad inicial = -60 m/s
espacio recorrido = 600 m

Problema 8

Datos:

$$v_0 = 0$$

$$a = 6 \text{ m/s}^2$$

$$v_f = 80 \text{ km/h} = 22.2 \text{ m/s}$$

$$t = \frac{v - v_0}{a}$$

$$t = \frac{22.2 \text{ m/s} - 0}{6 \text{ m/s}^2} = 3.7 \text{ s.}$$

$$\text{tiempo} = 3.7 \text{ s.}$$