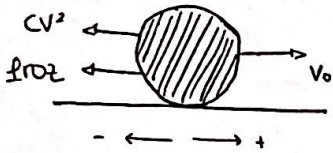


* EJERCICIO 21.

→ te lo dice el problema anterior



EXAMEN !

$$\Sigma F = m \cdot \ddot{a}$$

$$m \cdot \frac{dv}{dt} = -cv^2 - f_{roz} = -(cv^2 + f_{roz})$$

$$\sqrt{\frac{c}{f_{roz}}} \cdot v = z$$

$$dv = dz \sqrt{\frac{f_{roz}}{c}}$$

$$m \cdot \frac{dv}{cv^2 + f_{roz}} = -dt \Rightarrow -dt = \frac{m}{f_{roz}} \cdot \frac{dv}{\frac{cv^2}{f_{roz}} + 1} = \frac{m}{f_{roz}} \frac{dv}{\left(\sqrt{\frac{c}{f_{roz}}} \cdot v\right)^2 + 1} = \frac{m}{f_{roz}} \cdot \frac{\sqrt{\frac{f_{roz}}{c}} \cdot dz}{z^2 + 1} =$$

$$= \frac{m}{\sqrt{f_{roz} \cdot c}} \cdot \frac{dz}{z^2 + 1}$$

$$\int \frac{1}{x^2 + 1} dx = \arctg x$$

$$\frac{\sqrt{\frac{f_{roz}}{c}}}{f_{roz}} = \frac{1}{f_{roz} \sqrt{\frac{c}{f_{roz}}}} = \frac{1}{\sqrt{f_{roz} \cdot c}}$$

$$\frac{f_{roz}}{\sqrt{f_{roz}}} = \sqrt{f_{roz}}$$

$$-\int dt = \frac{m}{\sqrt{f_{roz} \cdot c}} \int \frac{1}{z^2 + 1} dz \Rightarrow -t = \frac{m}{\sqrt{f_{roz} \cdot c}} \arctg \left(\sqrt{\frac{c}{f_{roz}}} \cdot v \right) \Big|_{v_0}^{v(t)}$$

MAL !!

$$t = \frac{m}{\sqrt{f_{roz} \cdot c}} \left[\arctg \left(\sqrt{\frac{c}{f_{roz}}} v_0 \right) - \arctg \left(\sqrt{\frac{c}{f_{roz}}} v(t) \right) \right]$$

$$t = \frac{m}{\sqrt{f_{roz} \cdot c}} \arctg \sqrt{\frac{c}{f_{roz}}} (v_0 - v(t))$$

RADIANTES

$\left. \begin{matrix} m = 80 \text{ kg} \\ f_{roz} = 2 \text{ N} \\ c = 0.2 \text{ N} \cdot (\text{cm/s})^2 \\ v_0 = 20 \text{ m/s} \end{matrix} \right\}$
 ya hemos quitado el - c t.

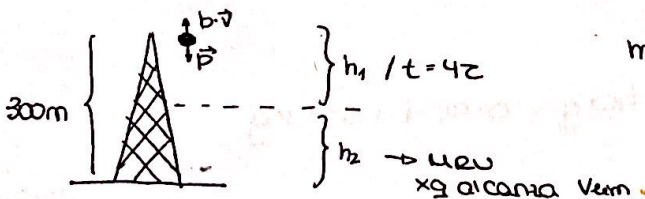
no confundir

HACER TODA ESTA CUENTA EN RADS y...

$$v(t) = \sqrt{\frac{f_{roz}}{c}} \cdot \text{tg} \left[\arctg \left(\sqrt{\frac{f_{roz}}{c}} v_0 \right) - \frac{\sqrt{f_{roz} \cdot c}}{m} t \right]$$

- t (v(t) = 15 m/s) = 6.34 seg
- t (v(t) = 10 m/s) = 18.4 seg
- t (v(t) = 5 m/s) = 48.31 seg
- t (v(t) = 0 m/s) = 142.42 seg.

* EJERCICIO 23.



$$m \cdot g = b \cdot v_{erm} \Rightarrow v_{erm} = \frac{m \cdot g}{b} = 13 \text{ m/s}$$

$$v \cdot \rho = \frac{4}{3} \pi r^3 \cdot \rho = \frac{4}{3} \pi \cdot (10 \cdot 10^3 \text{ m})^3 \cdot 4500 \text{ (kg/m}^3)$$

$$b = 4 \cdot 10^{-2}$$

TRAMO 1



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