

4.45

Datos

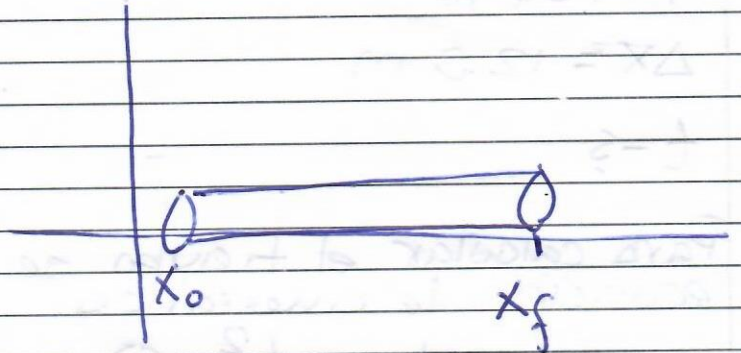
$$x = 9 \cdot 10^3 t^2 - 8 \cdot 10^4 t^3 \quad [\text{m}]$$

$$x(0.025) = ?$$

$$v(0.025) = ?$$

$$F(0) = ?$$

$$F(0.025) = ?$$



$$\Delta x = x_f - x_0$$

$$\Delta x = x_f = x(0.025) = 9 \cdot 10^3 (0.025)^2 - 8 \cdot 10^4 (0.025)^3$$

$$x(0.025) = 9 \cdot 10^3 (6.25 \cdot 10^{-4}) - 8 \cdot 10^4 (1.562 \cdot 10^{-5})$$

$$x(0.025) = 56.25 \cdot 10^{-1} - 12.5 \cdot 10^{-1}$$

$$x(0.025) = 4.4 \text{ m}$$

b) Como  $v = \frac{dx}{dt}$

$$v = 18 \cdot 10^3 t - 24 \cdot 10^4 t^2$$

$$v = 18 \cdot 10^3 (0.025) - 24 \cdot 10^4 (0.025)^2$$

$$v = 0.45 \cdot 10^3 - 0.15 \cdot 10^3$$

$$v = 0.3 \cdot 10^3 = 300 \text{ m/s}$$

c) Para calcular la fuerza es necesario la aceleración  $a = \frac{dv}{dt}$

$$a = 18 \cdot 10^3 - 48 \cdot 10^4 t$$

$$a(0) = 18 \cdot 10^3 \text{ m/s}^2 \quad F(0) = 1.5 \cdot 18 \cdot 10^3 = 2.7 \cdot 10^4 \text{ N}$$