

11. 6

$$x(t) = 5 \cdot \cos\left(4\pi t + \frac{\pi}{6}\right)$$

x em cm t em s

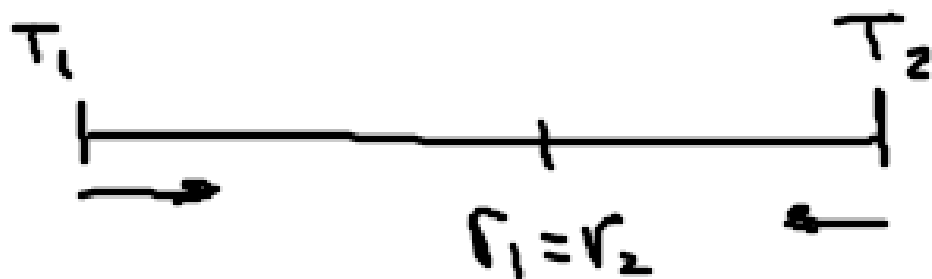
$$v = 5 \cdot \left(-\sin\left(4\pi t + \frac{\pi}{6}\right) \cdot 4\pi\right)$$

$$v = \underbrace{-20\pi}_{A \cdot \omega} \cdot \sin\left(4\pi t + \frac{\pi}{6}\right) \rightarrow v_{\max} = 20\pi$$

$$a = \underbrace{-80\pi^2}_{A \cdot \omega^2} \cdot \cos\left(4\pi t + \frac{\pi}{6}\right) \rightarrow a_{\max} = 80\pi^2$$

Física 2013 UV

$$\Downarrow r = r_0 + v \cdot \Delta t$$



$$v = 4'17 \text{ m/s}$$

$$r_1 = r_0 + v \cdot \Delta t = 0 + 4'17 \cdot t$$

$$b) v_p = 5'55 \text{ m/s}$$

$$r_2 = r_0 - v \cdot \Delta t = 60000 - 4'17 t$$

Se encuentran $r_1 = r_2$

$$4'17 t = 60000 - 4'17 t$$

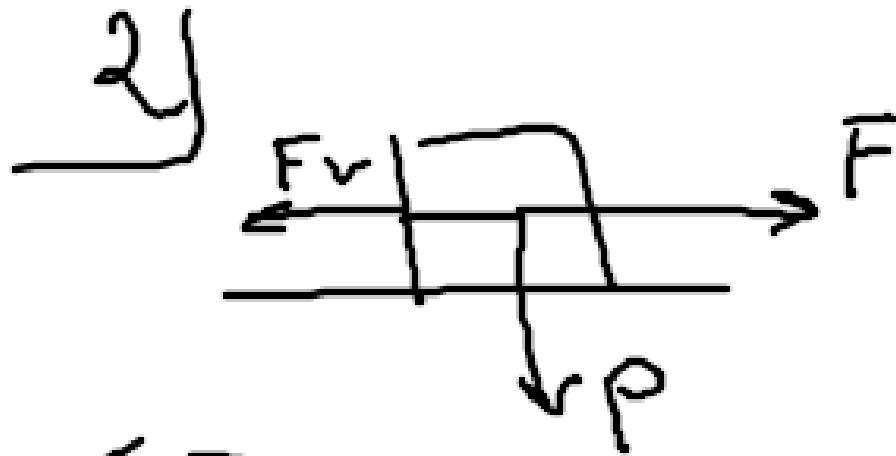
$$4'17 t + 4'17 t = 60000$$

$$t = 7200 \text{ s}$$

$$r = v \cdot t$$

$$r = 5'55 \cdot 7200$$

$$\underline{r = 40000 \text{ m}}$$



$$\sum F = m \cdot a$$

$$F_r = \mu \cdot N$$

$$P = m \cdot g$$

$$\sum F = m \cdot a$$

$$F - F_r = m \cdot a$$

$$700 - 200 = 100 \cdot a$$

$$a = 5 \text{ m/s}^2$$

$$F_r = N \cdot \mu = 0.2 \cdot 400 \cdot 10$$

$$F_r = 200 \text{ N}$$

$$3) X = 2 \cdot \cos(10t + 2\pi)$$

$$\omega = \frac{2\pi}{T}$$

$$X = A \cdot \cos(\underbrace{\omega}_{\text{f}} t + \varphi_0)$$

$$A = 2 \text{ m}$$

$$\omega = \frac{2\pi}{T} \rightarrow T = \frac{2\pi}{\omega} = \frac{2\pi}{10} = 0,2\pi \text{ s}$$

$$V_{\text{máx}} = A \cdot \omega = 2 \cdot 10 = 20 \text{ m/s}$$

Posición inicial $t=0$

$$X = 2 \cdot \cos(10 \cdot 0 + 2\pi) = 2 \text{ m}$$

$$4) \quad \vec{E} = k \cdot \frac{q}{r^2}$$

$$F = k \frac{q_1 q_2}{r^2} = q \cdot \vec{E}$$

