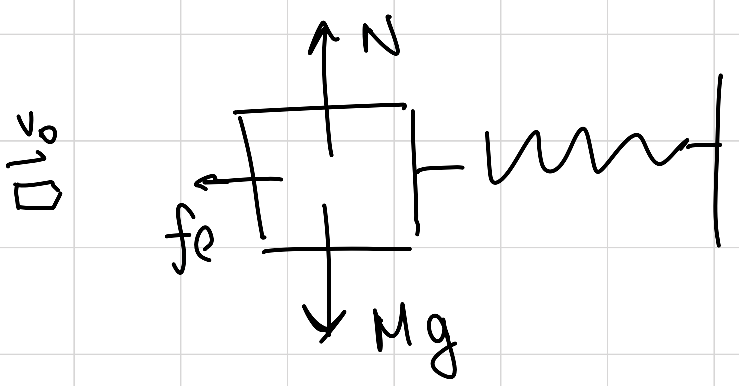
$\vec{p} = cte$?

$\hookrightarrow$ No hay F_{dis}



$N = Mg$

$fe = 0$

$\hookrightarrow \quad k\,\Delta x = 0$

$\therefore \quad \Delta x = 0$

a) $\vec{p}_i = m_b \cdot \vec{V}_0$

$\vec{p}_f = (M + m_b)\,\vec{v}_f$

$$\vec{V}_f = \frac{m_b \vec{V}_0}{(M+m_b)} \checkmark$$

b) $\delta_M = \Delta x_M$?

$E = cte$

$\hookrightarrow K,\ U_e$

$i \rightarrow$ justo dsp del choque

$$E_i = K_i = \frac{1}{2}(M+m_b)\,v_f^2 = \frac{1}{2}\cancel{(+)}\frac{m_b^2 V_0^2}{\cancel{(+)^2}} = \frac{m_b^2 V_0^2}{2(M+m_b)}$$

$$E_f = U_e = \frac{1}{2}k\,\delta^2$$

f: Máx comp

$$E_i \overset{!}{=} E_f$$

$$\frac{m_b^2 V_0^2}{\cancel{2}(M+m_b)} = \frac{1}{\cancel{2}}k\,\delta^2$$

$$\delta = \frac{m_b V_0}{\sqrt{k(M+m_b)}} \quad \square$$

Kbb dsp del Choque

$$K_{bb} = \frac{m_b^2 V_0^2}{2(M+m_b)}.$$

$$K_b = \frac{1}{2} m_b V_0^2$$

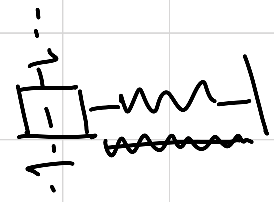
$$K_b - K_{bb} = \frac{1}{2} m_b V_0^2 - \frac{1}{2} m_b V_0^2 \left(\frac{m_b}{M+m_b}\right)$$

$$= \frac{1}{2} m_b V_0^2 \left(1 - \frac{m_b}{M+m_b}\right)$$

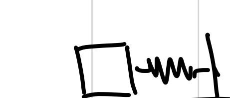
$$= \frac{1}{2} m_b V_0 \left(\frac{M+\cancel{m_b}-\cancel{m_b}}{M+m_b}\right)$$

$$= \frac{1}{2} \frac{M \cdot m_b V_0^2}{M+m_b} \quad \square$$

fr trabaja



$x=0$

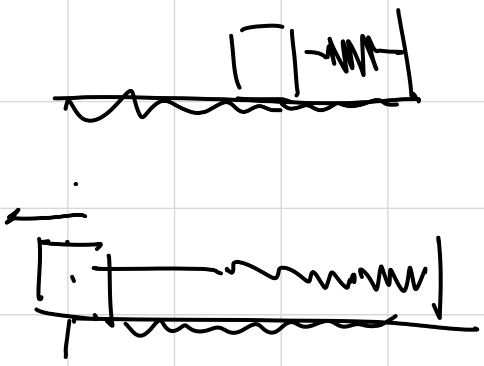


$$E_i = \frac{1}{2} \frac{m_b^2 V_0^2}{(M+m_b)}$$

$$E_f = U_{ef}$$

$$U_{ef} - K_i = W_{fr}$$

$$W_{fr} = (M+m_b) g \mu r \overset{-1}{\cancel{\cos 180}}$$



$$K_i = \frac{m_b^2 V_0^2}{2(M+m_b)}$$

$$U_{ef} = ?$$

$$K_{f'} = \frac{m_b^2 V_0^2}{8(M+m_b)}$$

f' : Vuelve a pasar por $x=0$

$$K_{f'} - U_e = W_{fr'} \qquad K_{f'} = \frac{1}{2}(M+m_b)\left(\frac{m_b v_0}{2(M+b)}\right)^2 = \frac{m_b^2 V_0^2}{8(M+m_b)}$$

$$W_{fr}' = -(M+m_b)g\mu r$$

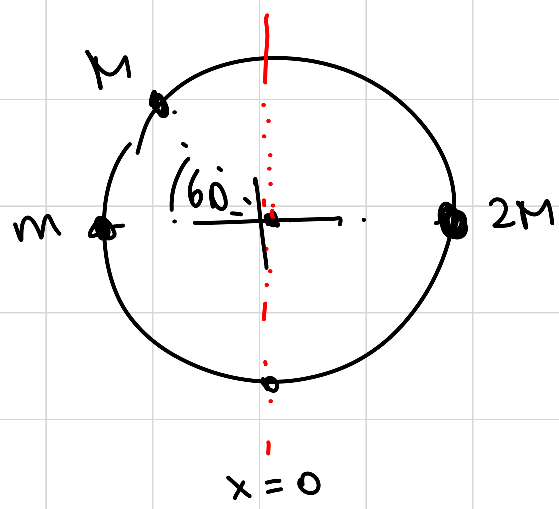
$$U_e - \overset{K_i}{\frac{m_b^2 V_0^2}{2(M+m_b)}} = -(M+m_b)g\mu r$$

(+)

$$\frac{m_b^2 V_0^2}{8(M+m_b)} - U_e = -(M+m_b)g\mu r$$

$$\frac{m_b^2 V_0^2}{8(M+m_b)} - \frac{m_b^2 V_0^2}{2(\ )} = -2(\ )g\mu r$$

$$2r = \frac{1}{g\mu(M+m_b)}\left(\frac{3}{8}\frac{m_b^2 V_0^2}{(M+m_b)}\right) = \frac{3}{8}\frac{m_b^2 V_0^2}{g\mu(M+m_b)^2}$$



$$X_{CM} = \frac{\vec{x}_m \cdot m + \vec{x}_M \cdot M + \vec{x}_{2M} \cdot 2M}{m + M + 2M}$$

$$\vec{x}_m = -R$$
$$\vec{x}_{2M} = R$$
$$\vec{x}_M = -R \cos 60$$

$$X_{CM} \overset{!}{=} 0$$

$$-\cancel{R} \cdot m - \cancel{R} \cos 60 \cdot M + \cancel{R} \cdot 2M = 0$$

$$m = M\left(2 - \cos 60\right)$$

$$m = \frac{3}{2} M$$