

## Solución Parcial

$$m_1 = m_2 = m$$

$$v_{tx} = \frac{x}{t} = \frac{3m}{3s} = 1m/s \quad \text{a) Velocidad posterior al choque}$$

$$v_{i1}m + v_{i0}m = 2m(1m/s)$$

$$v_{i1}m = 2m(1m/s) = 2m/s \quad \text{La velocidad de } m_1 \text{ antes del choque.}$$

Por energías

$$mgh = \frac{1}{2}mv^2$$

$$R = \frac{1}{2} \frac{v^2}{g} = \frac{2}{g} \approx 0,2m.$$

$$y_f = y_0 + v_{yt} - \frac{1}{2}gt^2$$

$$y_0 = \frac{1}{2}gt^2 \approx 45m.$$

## PROBLEMA 2

$$\frac{1}{2}kx^2 = mgh + \frac{1}{2}mv_B^2 \quad -N - mg = -\frac{mv_B^2}{R}$$

$$\frac{1}{2}kx^2 = 2mgh + \frac{1}{2}mgh$$

$$v_B^2 = mgh$$

$$\frac{1}{2}kx^2 = \frac{5}{2}gh$$

$$x_{mh} = \sqrt{\frac{5gh}{k}} = \sqrt{\frac{5gh}{k}}$$

$$b) \frac{1}{2}kx^2 = \frac{1}{2} \left( \frac{1N}{m} \right) \left( \frac{5gh}{k} \right) \approx \frac{1}{2} \frac{5 \cdot 10 \cdot 5}{10 \cdot 1} = 12.5J$$

$$\frac{1}{2}mv^2 = \frac{1}{2}h\nu$$

$$v^2 = \cancel{h} \left( \frac{592}{\cancel{h}} \right) \frac{1}{m} = \frac{595}{10} \cdot \frac{1}{1} = 25 \approx 5 \text{ m/s} = v$$

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$$b) \quad m_1 v_{1x} + m_2 v_{2x} = (m_1 + m_2) v_{tx}$$

$$m_1 v_{1y} + m_2 v_{2y} = (m_1 + m_2) v_{ty}$$

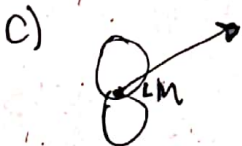
2. for

$$m_1(4) + m_2(-1) = 5 v_{tx}$$

$$8 - 3 = 5 v_{tx} \Rightarrow v_{tx} = 1 \text{ m/s}$$

$$v_{ty} \quad 2(4)(3) + 3(2) = v_{ty}(5)$$

$$\frac{12}{5} = v_{ty}$$





d) antes del choque y después del choque  
 $V_{cm}$  es la misma

$$\vec{V}_{cm} = (1\hat{i} + \frac{12}{5}\hat{j}) \text{ m/s}$$

e)  $\vec{h} \cdot \vec{L}_i^2 = 25$        $|\vec{V}_2|^2 = 5$

antes del choque

$$E_i = \frac{1}{2}(2)25 + \frac{1}{2}(3)5 = 25 + 7,5 = 32,5 \text{ J}$$

$$E_f = \frac{1}{2}(5) \left(1 + \frac{144}{25}\right) = \frac{1}{2}5 \cdot \left(\frac{169}{25}\right) = \frac{169}{10} = 16,9 \text{ J}$$

$$\Delta E = E_i - E_f = (32,5 - 16,9) \text{ J} = 15,4 \text{ J}$$