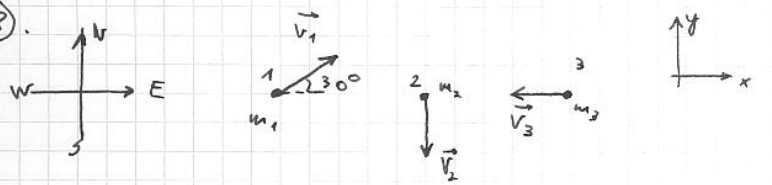
7.8.



on cherche v_2 et v_3 (inconnues)

$\vec{P}_{Totale} = \vec{P}_1 + \vec{P}_2 + \vec{P}_3 = \vec{0}$ $\Rightarrow$ en composantes : $\begin{cases} P_{Tx} = P_{1x} + P_{2x} + P_{3x} = 0 \\ P_{Ty} = P_{1y} + P_{2y} + P_{3y} = 0 \end{cases}$

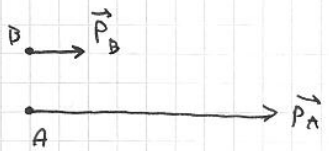
sur x : $m_1 v_1 \cos 30 + m_3 v_3 = 0$

$1080 \cdot 28 \cdot \cos 30 + 1350 \cdot v_3 = 0$ $\Rightarrow v_3 = -\dfrac{1080 \cdot 28 \cdot \cos 30^\circ}{1350} \simeq -19{,}4\ m/s$ (composante)

sur y : $m_1 v_1 \cos 60^\circ + m_2 v_2 = 0$

$1080 \cdot 28 \cdot \cos 60^\circ + 1630 \cdot v_2 = 0$ $\Rightarrow v_2 = -\dfrac{1080 \cdot 28 \cdot \cos 60^\circ}{1630} \simeq -9{,}3\ m/s$ (composante)

7.9.



$\begin{cases} p_A = 4 p_B \Rightarrow m_A v_A = 4 m_B v_B & (1) \\ \frac{1}{2} m_A v_A^2 = \frac{1}{2} m_B v_B^2 \cdot 2 & (2) \end{cases}$

(1) : $\dfrac{m_A}{m_B} = 4 \cdot \dfrac{v_B}{v_A}$

(2) : $\dfrac{m_A}{m_B} = 2\left(\dfrac{v_B}{v_A}\right)^2$

$\Rightarrow 4 \cdot \dfrac{v_B}{v_A} = 2 \cdot \left(\dfrac{v_B}{v_A}\right)^2 \Rightarrow \dfrac{v_B}{v_A} = 2 \Rightarrow \dfrac{m_A}{m_B} = 8$

$\dfrac{v_A}{v_B} = \dfrac{1}{2}$