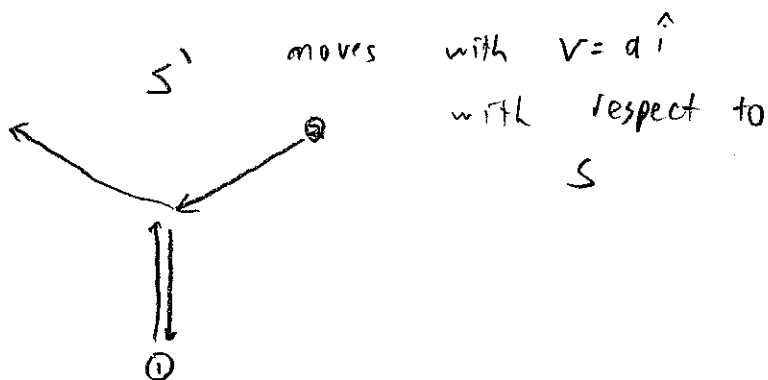


$$\left. \begin{aligned} \vec{v}_1 &= a\hat{i} + b\hat{j} \\ \vec{v}_2 &= -a\hat{i} - b\hat{j} \end{aligned} \right\} \text{before}$$

$$\left. \begin{aligned} \vec{v}_1 &= a\hat{i} - b\hat{j} \\ \vec{v}_2 &= -a\hat{i} + b\hat{j} \end{aligned} \right\} \text{after}$$



$$m_1 = m_2$$

(1.) 5 points. show relativistic momentum is conserved through the collision in S' .

(2.) 5 points. start with $E_k = \int_0^u F dx$ and show the derivation of $E_k = mc^2(\gamma - 1)$

(3.) 5 points. show the total Energy is conserved through the collision in S' . $E_{tot} = \gamma_1 m_1 c^2 + \gamma_2 m_2 c^2$