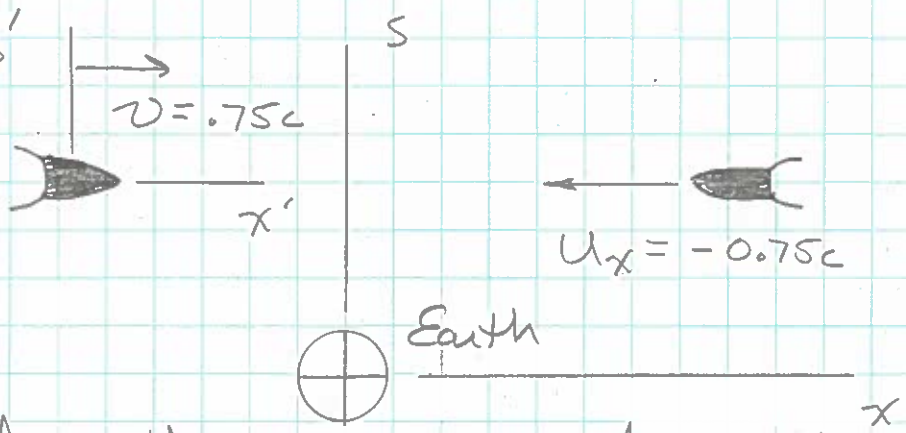
a.)




Want: $u_x$ as measured in S'.

b.) Galilean Transformation give:

$$u_x' = u_x - v = -1.5c \Rightarrow \text{Speed} = 1.5c$$

c.) Lorentz Transformation:

$$u_x' = \frac{u_x - v}{1 - \frac{v u_x}{c^2}} = \frac{-0.75c - 0.75c}{1 - \frac{(0.75c)(-0.75c)}{c^2}}$$

$$= \frac{-1.5c}{1 + (.75)^2}$$

$$\therefore \quad u_x' = -0.96c$$

and the speed is $0.96c$.