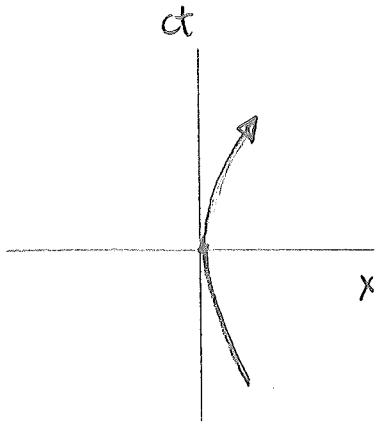
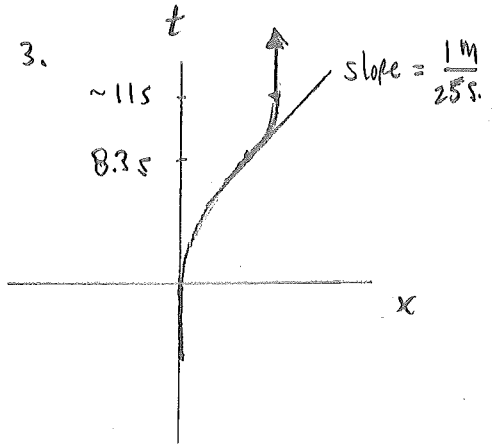
Ohanian Solutions #1.

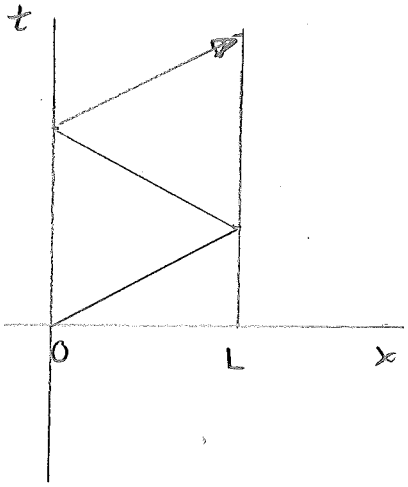
2.



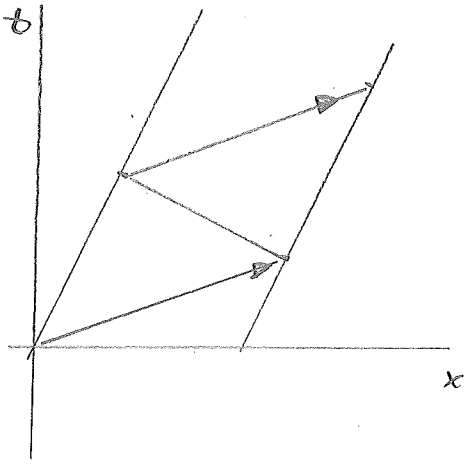
3.



4.



7.

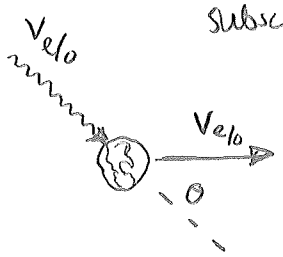


8.

$v_{p/e} = v_{p/s} + v_{s/e} = 4 \times 10^8$ m/s. Probe hits earth before light.

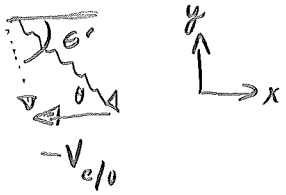
16.

Subscripts e = earth o = ether l = light



$\vec{v}_{l/e} = \vec{v}_{l/o} + \vec{v}_{o/e}$ $\quad \vec{v}_{o/e} = -\vec{v}_{e/o}$

$= \vec{v}_{l/o} - \vec{v}_{e/o}$



$$\tan\theta' = \frac{v_{l/o,y}}{v_{l/o,x} - v_{e/o}} = \frac{c\sin\theta}{c\cos\theta - v} = \frac{\sin\theta}{\cos\theta - v/c}$$

Ohanian has chosen $\theta = 180° - \theta_{oh}$; this is a trivial difference