Problem 1: Tipler 1-22

Problem 2: Tipler 1-27

Problem 3: Tipler 1-46

Problem 4:
Finish the problem started in class.

A light beam is propagating at an angle $\theta$ from the $x$-axis of frame $S$, so that the components of its velocity along the $x$ and $y$ axes are $c \cos \theta$ and $c \sin \theta$, respectively.

a) Show that the speed of this light beam is also $c$ in frame $S'$, which moves at speed $v$ relative to frame $S$.

b) What is the angle $\theta'$ of the beam measured from the $x'$ axis in frame $S'$? Is this angle greater, the same, or less than the angle $\theta$ in $S$. 