Physics 201, Fall 2018
Problem Set #2 (due Friday, Sept 14)

Problems from Serway, Moses and Moyer:

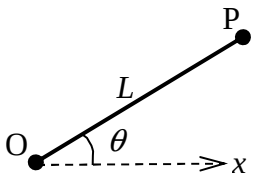
1.26, 1.28, 1.30, 1.31, 1.33

Additional required problems:

Problem 1: The space and time coordinates for two events as measured in a frame S are as follows:
Event 1: $x_1=x_0$, $t_1=x_0/c$
Event 2 : $x_2=2x_0$, $t_2=x_0/2c$

(a) There exists a frame in which these events occur at the same time. Find the velocity of this frame with respect to S.
(b) What is the value of t at which both events occur in the new frame?

Problem 2: A flash of light is emitted at point O and is later observed in point P, as shown. In frame S, the line OP has a length L and makes angle θ with the x-axis. In a frame S' moving relative to S with a constant velocity v along the x axis:



(a) How much time τ' has elapsed between emission and absorption of light?
(b) What is the spatial separation L' between the point of emission and the point of absorption of the light?

Hint: the answer will be different from what you got last week in problem 1.14, even though they look similar.