PHYS 3740 In Class Group Exercise

Name: _____ Date: _____

Classical Relativity (David W. Hogg Problem 1.2)

You are walking at 2 m/s down a straight road, which is aligned with the x-axis. At time $t = 0$ s you sneeze. At time $t = 5$ s a dog barks, and at the moment she barks she is $x = 10$ m ahead of you in he road. At time $t = 10$ s a car that is just then 15 m behind you ($x = -15$ m) backfires.

(a) Plot the positions x and times t of the sneeze, bark and backfire, relative to you, on a two-dimensional graph. Label the points.

(b) Plot positions x' and times t' of the sneeze, bark and backfire, relative to an observer standing still at the position where you sneezed. Assume your watches are synchronized.