Physics 201, Fall 2018
Problem Set #3 (due Friday, Sept 21)

Each problem is 10 points.

Problems from Serway, Moses and Moyer:

1.16, 1.17, 1.35, 1.36, 1.38, 2.8, 2.12, 2.15

From my previous experience teaching this class, I found that sometimes students do not perform well on the midterm not because they have problems with PHYS201 material, but because there are gaps in their General Physics background. To refresh everyone's memory and to make sure we are all on the same page, please solve the problems below without using any relativistic concepts we are learning, these are PHYS101 problems. These are still mandatory problems.

Review problems (5 points each)

R1: An explosion breaks an object, originally at rest, into two fragments. One fragment acquire twice the kinetic energy of the other. What is the ratio of their masses?

R2. A ball moving with a speed of 17m/s strikes an identical ball that is initially at rest. After the collisions, the incoming ball has been deviated by 45° from its original direction, and the struck ball moves off at 30° from the original direction. What are the speeds of the two balls after the collision?
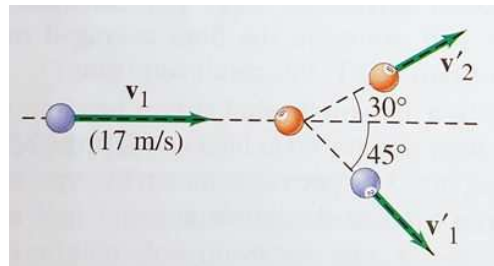
R3. A 0.45kg hockey puck, moving east with a speed of 4.2m/s, has a head-on collision with a 0.90kg puck initially at rest. Assuming a perfectly elastic collision, what will be the speed and direction of each object after the collision?

R4. A hokey puck of mass $4m$ has been rigged to explode, as part of a practical joke. Initially the puck is at rest on a frictionless ice rink. Then it bursts into three pieces. One chunk, of mass m, slides across the ice at speed v. Another chunk, of mass $2m$, slides across the ice at speed $2v$, in a direction at right angles to the direction of the first piece. From this information, find the velocity of the final chunk.