PHY 166, Fall 2021, TEST 1 Practice (3 points maximum for each problem, 15 points maximum for the whole)

 An object moves from the position r₁=(1,3,-5) to the position r₂=(-1,4,8) during the time 8 s. Find: (a) displacement; (b) distance; (c) average velocity; (d) average speed.

2. A car is traveling a road that makes quarter of a circle with a constant speed *s*. What is the magnitude of the average velocity *v* of the car?

3. Two stones are thrown vertically up with the initial velocity v_0 , second stone with a time delay t_0 with respect to the first one. At which time after the beginning of the motion the two stones will collide? Is this scenario possible for any v_0 and t_0 ? What are the limitations?

4. A gunman shoots from a riffle in a horizontal direction without correcting for gravity. How much below the intended target, at a horizontal distance d, will the bullet strike if its initial speed is v_0 ?

5. A ship crosses a river aiming at the angle θ to the left from the straight course. The speed of the ship with respect to water is v'. The width of the river is d and the water velocity is u to the right. What will be the side displacement h of the ship as it lands on the other shore?