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General Physics-I, Quiz 4
PHYS1000AA, Fall Semester-103
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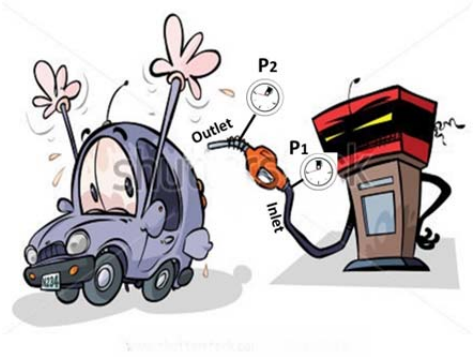
St. ID:_____ Name:_____

Chapter 14-16, Serway; ANY TYPES OF CHEATING WILL MAKE YOU FAIL!
Please write down the answers on the blank space or on the back of this paper. Answer should be in english. [ ] indicates the question points.

1. Suppose you are going to fill gas (fuel) to your car in a gas filling station. Let they are using a hose tube with a pressure measuring device to flow fuel to your car. According to figure if the outlet and inlet radius of the hose tube are 2 cm and 4 cm respectively (a) Calculate the speed of the fuel at the outlet point (b) How much force will be exerted by the fuel if the flow rate 1000 cm^3 /sec at the outlet. Let the pressure difference between P_1 and P_2 meters is 3.5 k Pa and the density of the gas $\rho = 7.00x10^2$ kg/m^3. [20+15]



2. Now after filling the gas you start to drive the car on a highway with a speed 200 km/hr. After certain time unconsusly you crossed a large speed-breaker without pressing break and your car started to oscillate stongly due to shock absorber (Spring). For the effect of damping if the oscillation reduced gradualy, (a) find the frequency of damped oscilation. Let the damping coefficient of the spring material is 5.00 N.s/m and consider the whole system is confined under one spring system with spring constant, k= $2.05x10^4$ N/m. Given that the total mass of the car including you but (except) the wheels is m = 100 kg. (b) If there was no damping effect what type of osillation would you expect? [25+5]

3. (a) what types of wave can you see in the figure bellow and which one is produced in your headphone? If the speed of the wave-1 in +x direction is 20 m/s,wavelength, λ= 2.00 m and amplitude is 10 cm. Find (b) the frequency and angular frequency, (c) the angular wave number, and (d) the wave function for this wave. [10+10+5+10]