1. A loaded semi-truck consumes about 10 US gallons of diesel per hour (assuming an average speed of 60 mph) and is driven about 16 hours per day, every day of the year. The density of diesel id 0.85 kg/liter. If 1 barrel of crude oil produces 10 US gallons of diesel fuel. How many semi-trucks could run on the crude oil produced in the US in one year (1.8 x 109 barrels).
2. The density of a particular fluid is given by the following equation:$ ρ=64e^{7.9x10^{-7}P}$ where $ρ$ is density in units [lbm/ft3] and P is pressure in units [lbf/in2, or psi – pounds per square inch”].
3. What are the units of 64 and 7.9x10-7?
4. For a pressure of 8.5x106 N/m2, what is the density in units [kg/liter]?
5. Rewrite the formula for $ρ$ [kg/liter] as a function of P[N/m2]. Plug your answers from part b to check your answer.