CE 3305 Engineering Fluid Mechanics
Exercise Set 1
Summer 2018 – GERMANY

Purpose : Apply the ideal gas law under isothermal conditions. Perform analysis in absolute and gage pressures.
Assessment Criteria : Completion, results plausible, format correct, **R** script shown

Exercises:

1. (Problem 1.34 pg 26) Natural gas is stored in a spherical tank at a temperature of 10^oC. At a given initial time, the pressure in the tank is 100 kPa–gage, and the atmospheric pressure is 100 kPa–absolute. Some time later, after more gas has been compressed into the tank, the pressure in the tank is 200 kPa–gage, and the temperature is still 10^oC. What is the mass ratio of gas in the tank when $p = 200$ kPa–gage, to when the pressure was 100 kPa–gage?
2. Write a **R** script to handle the computations and show the results of the script.