

CANKAYA UNIVERSITY
FACULTY OF ENGINEERING AND ARCHITECTURE
MECHANICAL ENGINEERING DEPARTMENT
ME 211 THERMODYNAMICS I
CHAPTER 1
EXAMPLE PROBLEMS
Fall 2018

- 1) A gas is held in a vertical, frictionless cylinder-piston assembly. The pressure of the gas is such that it lifts the piston of mass 4 kg and compresses the spring above the piston. At equilibrium, the compressed spring exerts a force of 60 n on the piston (area of the cross section is 35 cm^2). If the atmospheric pressure is 95 kPa, determine the pressure of the gas inside the cylinder.

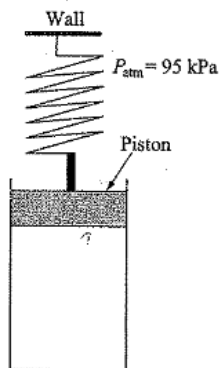
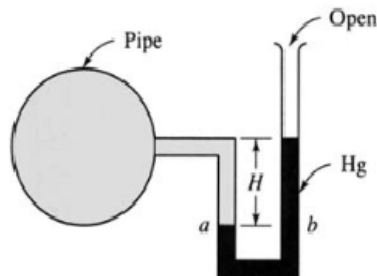


Fig. P1.5 A cylinder-piston assembly.

- P.2) The manometer shown in figure is used to measure the pressure in the water pipe. Determine the water pressure if the manometer reading is 0.6 m. Mercury is 13.6 times heavier than water.



P.3) A temperature scale of certain thermometer is given by the relation

$$T = a \ln x + b$$

where a and b are constants and x is the thermometric property of the fluid in the thermometer. If at the ice point and steam point the thermometric properties are found to be 1.5 and 7.5 respectively what will be the temperature corresponding to the thermometric property of 3.5 on Celsius scale.