

CANKAYA UNIVERSITY
FACULTY OF ENGINEERING AND ARCHITECTURE
MECHANICAL ENGINEERING DEPARTMENT

ME 211 THERMODYNAMICS I

CHAPTER 1 EXAMPLES

Fall 2015

11) A closed system consists of 0.2 kmol of ammonia (NH_3) occupying a volume of 3m^3 . Determine (a) the weight of the system, in N, and (b) the specific volume, in m^3/kmol and m^3/kg . Let $g = 9.81\text{m}/\text{s}^2$.

12) A closed system consisting of 2 kg of a gas undergoes a process during which the relation between pressure and volume is $p\forall^n = \text{constant}$. The process begins with $p_1 = 150\text{ kPa}$, $\forall_1 = 0.3\text{m}^3$ and ends with $p_2 = 450\text{ kPa}$, $\forall_2 = 0.137\text{m}^3$. Determine (a) the value of n and (b) the specific volume at states 1 and 2, each in m^3/kg . (c) Sketch the process on pressure–volume coordinates.

13) A mercury (Hg) manometer is used to measure the pressure in a vessel as shown in figure given below. The mercury has a density of $13\,590\text{ kg}/\text{m}^3$, and the height difference between the two columns is measured to be 24 cm. We want to determine the pressure inside the vessel.



