

ME/CH EN 2300
Homework # 4
Due Wednesday, Feb. 7

Note: Please list which section of the class you are in (ME EN or CH EN) on your assignment

#1 (4-15) A mass of 2.4 kg of air at 150 kPa and 12 °C is contained in a gas-tight, frictionless, piston-cylinder device. The air is now compressed to a final pressure of 600 kPa. During the process, heat is transferred from the air such that the temperature inside the cylinder remains constant. Calculate the work input during this process. (Answer = 272 kJ).

#2 (4-23) Determine the boundary work done by a gas during an expansion process if the pressure and volume values at various states are measured to be

300kPa	1 L
290 kPa	1.1L
270 kPa	1.2L
250 kPa	1.4L
220 kPa	1.7 L
200 kPa	2 L

#3 (3-2) What is the difference between saturated liquid and compressed liquid?

#4 (3-10) How does the boiling process at supercritical pressure differ from the boiling process at subcritical pressures?

#5 (3-14) Does the amount of heat absorbed as 1 kg of saturated liquid water boils at 100 C have to be equal to the amount of heat released as 1 kg of saturated water vapor condenses at 100 C?