

ME 211 – Thermo I

Fall 2013

Supplemental Problems 3

1. A piston-cylinder device contains 0.5 kg of water at 300 kPa and 100 deg. C. The water is heated (with an external source) to 300 kPa and 400 deg. C. Locate and show the initial and final states on a P-v diagram. Provide appropriate assumptions and determine:
 - a. The initial and final volume of the water/steam, cubic meters
 - b. The change in internal energy for the water, kJ
 - c. The moving boundary work, kJ
 - d. The heat transfer, kJ
2. $T = \text{Constant}$ for a gas....Example
3. $PV^n = \text{Constant}$ for a gas....Example