Review For Exam 1
Exam Information

• 50-minutes (strictly enforced)

• Resources allowed
  – The blue properties booklet
    • You can write anything you want in the white space of this booklet.
    • NO photocopies, no taping, pasting, photocopies, loose papers
  – A handheld calculator
    • No other electronic devices used including cell phones, computers, tablets, music players, etc.
Exam Information

• A table of conversion factors will be provided with the exam 😊
• NO interpolation will be required 😊
• Material covered
  – Everything since the first day of class
    • All in-class lecture material
    • All in-class problem solutions
    • All assigned reading questions
    • All homework assignments
Do you know …

• How to work with moles as well as mass?
• How to work with English and SI units (including $g_c$)?
• How to express fundamental dimensions in FLt or MLt?
• How to distinguish open, closed, and isolated systems?
• How thermodynamic properties are related to derivatives (as in Eqn 3.7)?
• How to apply the incompressible substance model? (using saturation data)
• How to apply the ideal gas model? (for PVT behavior as well as for internal energy, w/isochoric heat capacity, and enthalpy, w/isobaric heat capacity)
• How to apply the real fluid model (w/property Tables and w/EES)?
• How to locate thermodynamic states and sketch simple processes on P-T, P-v, and T-v diagrams? (critical point, triple point, saturation line, fusion line, compressed liquid region, two-phase region, superheated vapor region)
• What is the meaning of the technical terms inside back cover of your text (except entropy, isentropic, reversible, and availability)?
• What is quality? When is it used and how do you calculate it?
Do you know …

• How to calculate moving boundary work (for real fluids and for ideal gases)?
• What is a polytropic process (with special values of n for isochoric, isobaric, and isothermal ideal gas processes)?
• How to apply the Conservation of Mass to a system?
• How to apply the First Law of Thermodynamics to a system?
• What is the sign convention for heat, work, and energy transport within the First Law of thermodynamics (as used by engineers)?
• How to represent processes and cycles on P-V diagrams? How to use these diagrams to visualize process work as well as net cycle work?
• How to apply a thermodynamic problem solving methodology?
• How to find energy conversion efficiencies? (for heat engines, heat pumps, and refrigerators)
• How to find work conversion efficiencies? (for work absorbing and work delivering devices)
• How to code in EES (managing units, accessing fluid properties, using parametric tables, checking equations, and formatting results)?