

ME 201

Thermodynamics

Homework #4 Due Monday, January 30, 2006

1. Assuming an ideal gas calculate the specific volume in the appropriate units for:
 - a. N_2 at 500 kPa and 900 K
 - b. Neon at 1 psia and 500 R
 - c. Air at 14.7 psia and 72°F
2. Calculate the specific internal energy change for H_2 by assuming a temperature variation in c_v (i.e., integrating) at 700 kPa as its temperature changes from 350 K to 1300 K.
3. Calculate the specific enthalpy change (in the appropriate units) for the following ideal gas processes by first using an average c_p and then by using the ideal gas tables.
 - a. CO_2 at 2000 kPa goes from 500 K to 1300 K
 - b. CO_2 at 2000 kPa goes from 500 K to 600 K
 - c. Air at 40 psia and 270°F goes to 11 psia and 270°F
4. Carefully draw the following graph using air as an ideal gas.
 - a. temperature versus pressure showing lines of constant specific volume and specific enthalpy