Name: <u>Solution</u>

Problem 1

Determine the change of specific internal energy of air undergoing a process from 300 to 1,200 K using Table A.7.1.

$$du = u_2(1,200\,[\text{K}]) - u_1(300\,[\text{K}]) = (933.37 - 214.36)\,[\text{kJ/kg}] = 719.01\,[\text{kJ/kg}]$$

Problem 2

Determine the change of specific internal energy of air undergoing a process from 300 to 1,200 K using Table A.5.

$$du = C_{\text{V}0}\,dT = (0.717\,[\text{kJ/kg-K}])(1,200 - 300)\,[\text{K}] = 645.3\,[\text{kJ/kg}]$$

Problem 3

Determine the change of specific enthalpy of air undergoing a process from 300 to 1,200 K using Table A.7.1.

$$dh = h_2(1,200\,[\text{K}]) - h_1(300\,[\text{K}]) = (1,277.81 - 300.47)\,[\text{kJ/kg}] = 977.34\,[\text{kJ/kg}]$$

Problem 4

Determine the change of specific enthalpy of air undergoing a process from 300 to 1,200 K using Table A.5.

$$du = C_{P0}\,dT = (1.004\,[\text{kJ/kg-K}])(1,200 - 300)\,[\text{K}] = 903.6\,[\text{kJ/kg}]$$