

ME/CH EN 2300
Homework #12
Due April 18, 2007

1. (7-17) The entropy of the working fluid of an ideal Carnot cycle (*increases, decrease, stays the same*) during the isothermal heat addition process.
2. (7-23) A rigid tank contains an ideal gas at 40 C that is being stirred by a paddle wheel. The paddle wheel does 200 kJ of work on the ideal gas. It is observed that the temperature of the ideal gas remains constant during this process as a result of heat transfer between the system and the surroundings at 30 C. Determine the entropy change of the ideal gas.
3. (7-25) Heat in the amount of 100 kJ is transferred directly from a hot reservoir at 1200 K to a cold reservoir at 600 K. Calculate the entropy of the two reservoirs and determine if the increase of entropy principle is satisfied.
4. (7-37) Water vapor enters a compressor at 35 kPa and 160 C, and leaves as vapor at 300 kPa with the same specific entropy as at the inlet. What is the temperature and the specific enthalpy of the steam at the compressor exit?
5. (7-67) A 50 kg copper block initially at 80 C is dropped into an insulated tank that contains 120 liters of water at 25 C. Determine the final equilibrium temperature and the total entropy change for this process. Assume incompressible materials with constant specific heats.