Problem Set 16, PS16 due Friday June 25

PS16-1   In a simple Brayton gas turbine cycle, composed of a compressor, a turbine and a combustor, air enters the compressor, which has an efficiency of 85%, at 1 atmosphere and 300 K. The turbine has an inlet temperature of 1400 K and an efficiency of 93%. The turbine drives the compressor and also provides net mechanical power. The cycle pressure ratio is 9.74. Use table A-17 to determine the properties of air. Determine the cycle efficiency and sketch the temperature-entropy property diagram for the cycle.