**Problem based component 4 – Alex Bartella 400308868**

A turbocharger uses the power generated by a turbine to power a compressor. Steam enters the adiabatic turbine at 400 deg C and 5 MPa and leaves at 100 kPa. The turbine’s isentropic efficiency is 80%. Air (cp=1.005, R=0.287) enters the adiabatic compressor at 300K and leaves at 500K. Assume the processes are not reversible.

1. What is the isentropic efficiency of the compressor?
2. What is the actual temperature of the air exiting the compressor?
3. What is the entropy generated during the compression process?