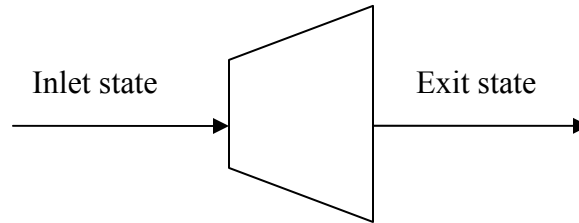1. An adiabatic turbine receives hot, high-pressure air at a pressure of 3 MPa and a
    temperature of 1700 K. The air leaves the turbine at a pressure of 0.1 MPa and a
    temperature of 1000 K. The inlet velocity is 200 m/s and the exit velocity is 300 m/s.

    a. Find the shaft power output per mass flow rate of the turbine.

    b. Find the entropy generation rate per mass flow rate of the turbine.

    c. Suppose a non-adiabatic turbine were used which lost 90 kJ/kg through heat
        transfer. What inlet temperature would be necessary to achieve the same power
        output (assuming the same exit conditions)?