Individual assignment No 4

1. Define a state of system (water, saturated steam, superheated steam) using following parameters:
    a. T=(95+N/10) °C, p=0,08 MPa;
    b. T=(100+N) °C; v=1 m^3/kg;
    c. p=(60+N) kPa; T=70 °C;
    d. p=(2,3+N/100) bar; s=(1+N/10) kJ/(kg k);
    e. T=(200+N) °C; h=2000 kJ/kg.
2. The enclosed cylinder with boiling water at atmospheric pressure is heated until it explodes at pressure (1+N/10) MPa. Define amount of heat supplied to cylinder.
3. The water at N liter open pot is boiling at atmospheric pressure. Define time needed for it to completely evaporate if power of stove is (500+N*100) W.
4. Household steam generator produces saturated steam at (80+N) g per second rate from water at ambient conditions. Define quality of produced steam if its power is (200+N) kW.
5. Steam turbine is working on saturated dry steam at its inlet. Define final quality of steam outlet and work if pressure on inlet and outlet are 10 MPa and 0.05 MPa, respectively. Consider process to be adiabatic.
6. Steam from turbine exhaust enters condenser at 0.5 m^3/s rate with pressure 100 kPa and quality 0.9. Define flow speed in tube at the outlet of condenser if its diameter is 50 mm.