

5. A sample consisting of 1.2 moles of a perfect gas with a molar heat capacity of $17.5 \text{ J K}^{-1} \text{ mol}^{-1}$ is initially at 180 kPa and 285 K. It undergoes reversible adiabatic expansion until its pressure reaches 120 kPa. Calculate the final volume and temperature and the work done. (25 pts)