9 (a) One mole of helium gas, initially at state A where pressure is 101.3 kPa and temperature is 5.0 °C, undergoes a process in which pressure falls to half its initial value at constant volume to state B. It then expands at the same pressure, doubling its volume, to state C.

Calculate the total work done by the gas. [2 marks]

(b) Suppose the gas undergoes a process from state A to state C at constant temperature, determine the work done by the gas. [3 marks]