Physics 301: Carnot Cycle Problem October 12, 2020

Using 1 mole and 1 liter of a monatomic ideal gas at temperature T_H as a starting point, and expanding to 2 liters in the first step of the cycle, draw the P-V diagram for the Carnot cycle between hot (500C) and cold (25C) resevoirs.

1. Find the heats Q_H, Q_C in Joules.
2. Find the work done by the engine in Joules.
3. Determine the efficiency from W_e/Q_H and show you get the same value as the Carnot efficiency.
4. Find the two entropy changes Q/T and show they sum to zero.
5. Make the P-V drawing. Label the axis in units of 10^5 pa and liters. I suggest using diffent colors for the isothermal and adiabatic curves.