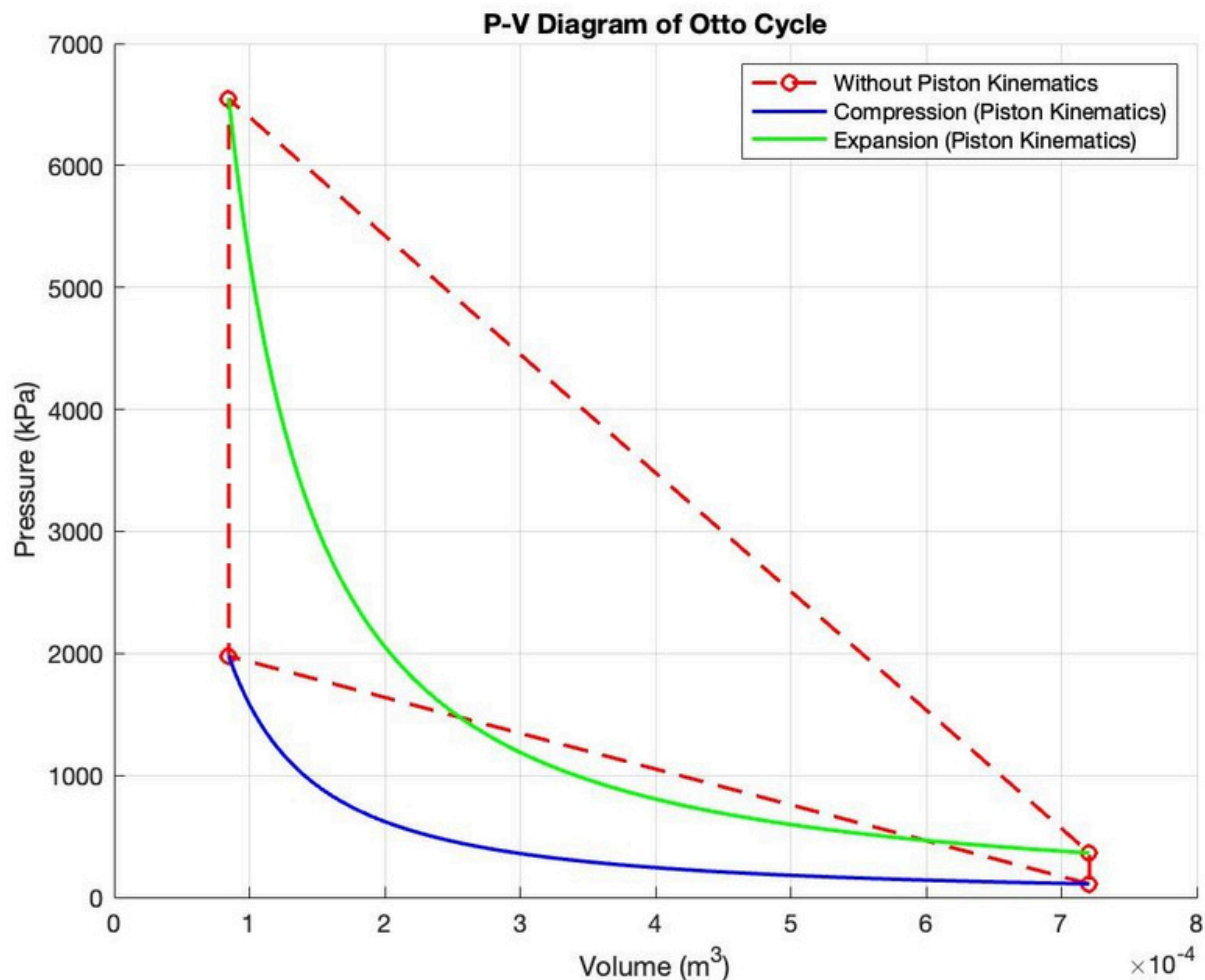


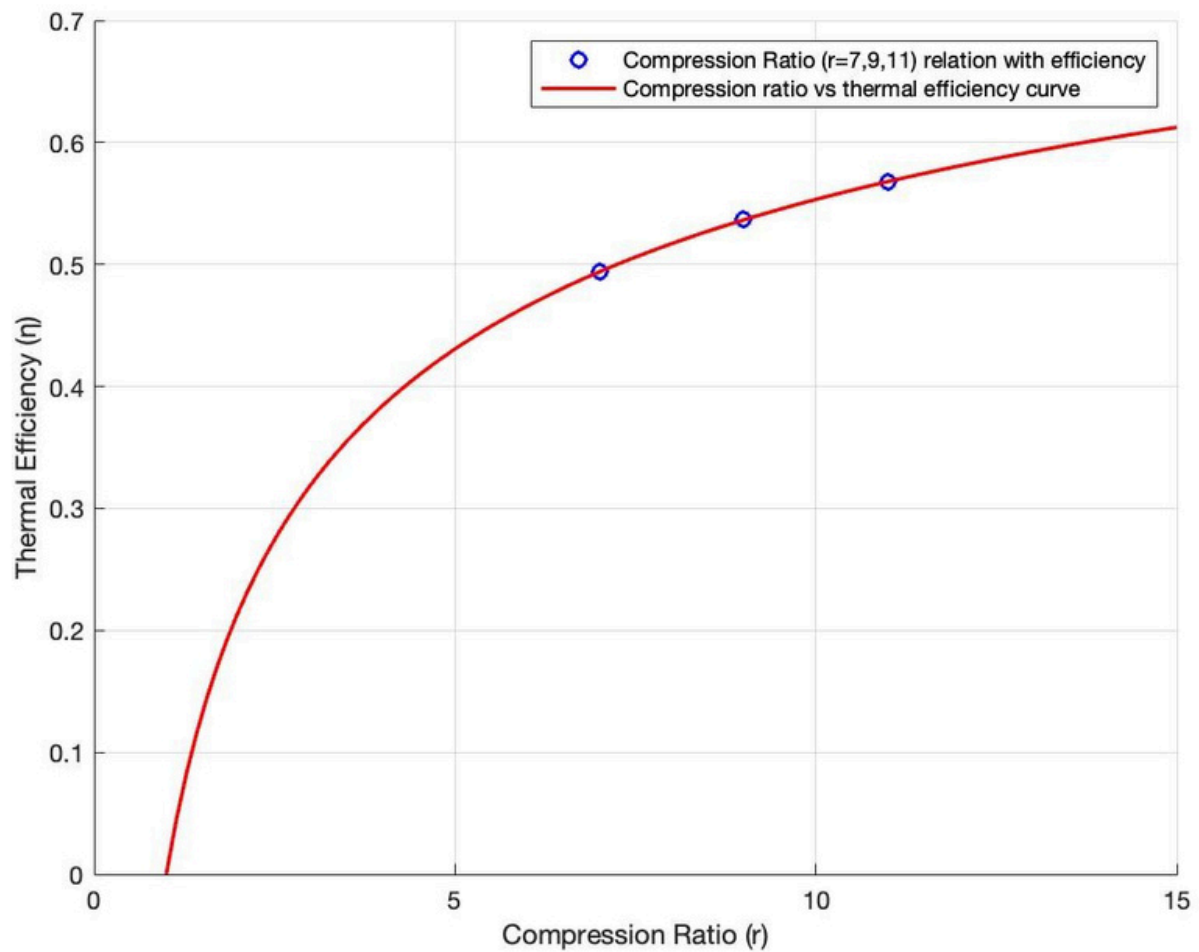
Question 2 (Assignment 2)

Graphical Observations and Inferences



- Using piston kinematics function gives a better overview of otto cycle, giving better results for thermodynamic relations like work etc. As seen,
- curve made without piston kinematics do not obey the conditions of the processes. Like process 1-2 is an adiabatic process (isentropic and reversible) but is shown by a straight line. Curve sketched by using piston kinematics obeys the conditions of the processes. Like process 1-2 clearly depicts the adiabatic process (isentropic and reversible). If we obtain results for thermal efficiency, it comes out to be same from both the curves, as thermal efficiency depends on compression and expansion volume, which has been given in the problem.

The state variables (pressure, temperature and volume) obtained without piston kinematics function is same as the state variables obtained with piston kinematics function.



- For r between r_1 and r_2 , the thermal efficiency curve is steeper than the flattened curve after r_2 . So, basically at higher compression ratios, increase in thermal efficiency is negligible, and for compression ratios between r_1 to r_2 , it is more feasible, as temperature of air fuel mixture is lower than the autoignition temperature of the fuel.