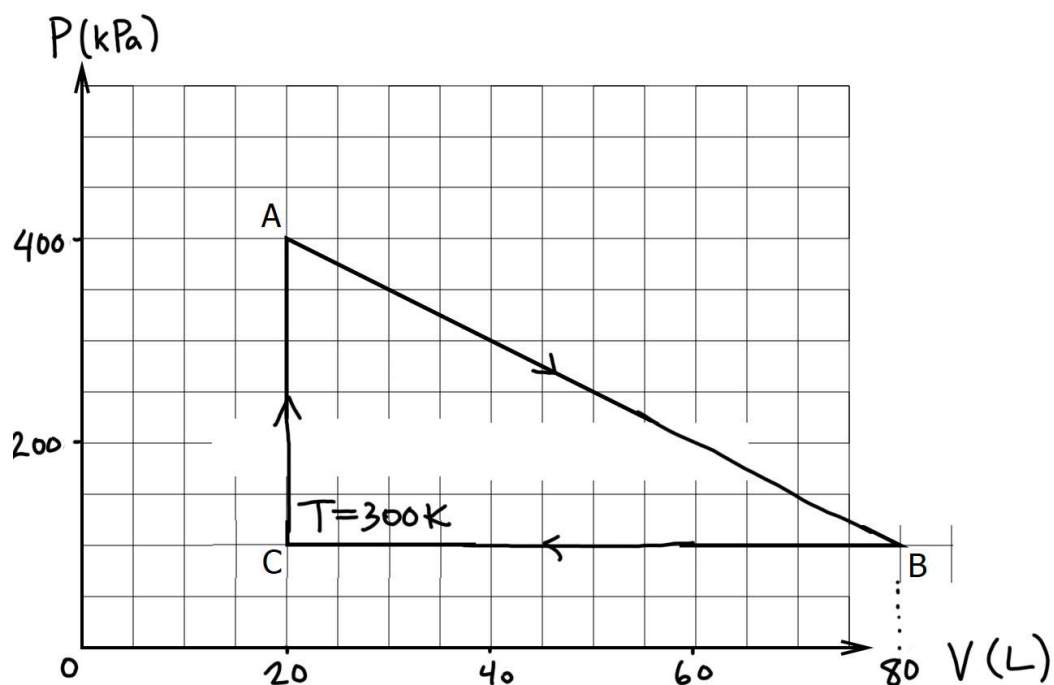


Bonus problem: Here's a cycle similar to the one in last week's tutorial. We assume that the gas is a monatomic ideal gas with $C_v = 3/2R$.



a) What is the maximum temperature reached by the gas on this cycle? At what volume does this happen?

Hint: it's not on one of the corners.

b) During the path from A to B, a net heat flows into the gas, but actually, heat flows in for part of this process and then out again. What is the amount of heat that flows in to the gas during the first part of this process and at what volume does heat stop flowing in and start flowing out?

Hint: the place where heat stops flowing in is not the place where the temperature is maximum. To find the right volume, you need to calculate the heat for a small change in volume. This will vanish in exactly one place along A \rightarrow B.

If you think you have a solution, e-mail a photo of your solution to Mark Van Raamsdonk at mav@phas.ubc.ca with "HW5 bonus" in the subject line before 10pm on Friday, October 26th . If your solution is correct, your name will be entered into a draw to win a fabulous prize!