

Answer on Question #51995-Physics-Solid State Physics

An ideal gas undergoes a cycle of processes as shown in the p-V diagram gases. Which statement correctly describes the situation?

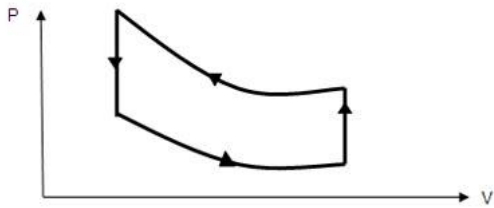
The internal energy of the gas increases over one complete cycle

Over the entire cycle, work is done by the gas.

The gas absorbs more heat than it releases heat over the whole cycle

The gas gives out more heat than it absorbs over the whole cycle.

Solution



The counterclockwise thermodynamic cycle indicated by the arrows shows that the cycle represents a refrigerator. So, the work is done on the gas.

The internal energy of the gas doesn't change over one complete cycle.

The work done on the gas is

$$W = Q_{out} - Q_{in} > 0.$$

Thus, the gas gives out more heat than it absorbs over the whole cycle.

Answer: The gas gives out more heat than it absorbs over the whole cycle.