

20A

● A 1.00-mol sample of an ideal monatomic gas is taken through the cycle shown in Figure P22.50. The process $A \rightarrow B$ is a reversible isothermal expansion. Calculate

- (a) the net work done by the gas, (b) the energy added to the gas by heat, (c) the energy exhausted from the gas by heat, and (d) the efficiency of the cycle.

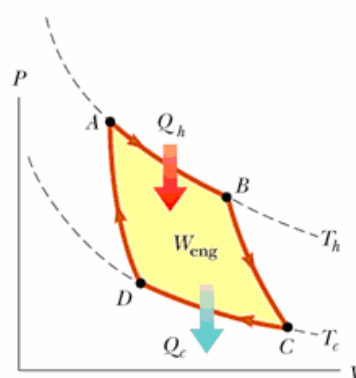
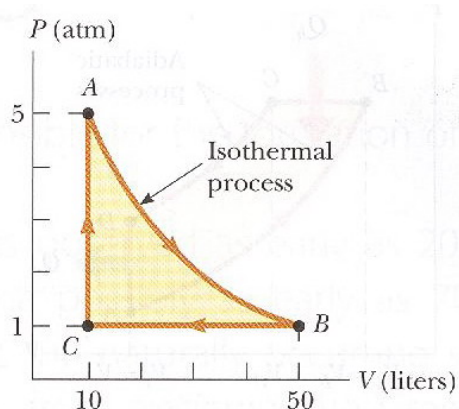


Fig. 22.10

20B

A 1.00-mol sample of an ideal gas ($\gamma = 1.40$) is carried through the Carnot cycle described in Active Figure 22.10. At point A, the pressure is 25.0 atm and the temperature is 600 K. At point C, the pressure is 1.00 atm and the temperature is 400 K. Calculate the net work done per cycle.

20C

A power plant, having a Carnot efficiency, produces electric power \mathcal{P} from turbines that take in energy from steam at temperature T_h and discharge energy at temperature T_c through a heat exchanger into a flowing river. The water downstream is warmer by ΔT due to the output of the power plant. Determine the flow rate of the river.