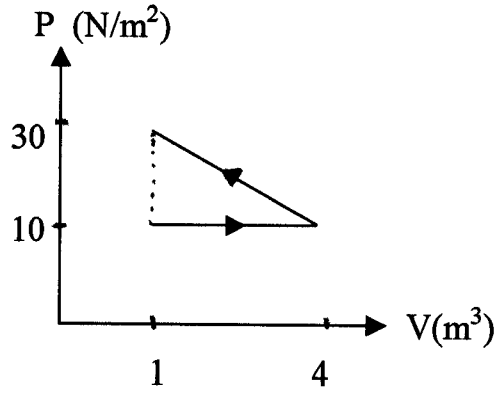
Physics 102
Quiz # 2
Chapter 18

Name : Solution Id : Sec. # :

A gas in a cylinder with movable piston undergoes the process shown in the figure below. Calculate the net heat during that process if the change in the internal energy of the gas is 50 J. Does the gas absorb or lose heat?



From the 1st law of thermodynamics

$$\Delta E_{int} = Q - W$$

$$\boxed{Q = \Delta E_{int} + W} \quad \cdots (1)$$

$\Delta E_{int} = 50$ J

W = The area of the triangle

$= -\frac{1}{2} \times 3 \times 20 = -30$ J

$\Rightarrow Q = 50 - 30 = 20$ J

So the gas absorb heat during this process.