Q1 A 30.0 moles of an ideal gas starting at point A is carried around the cycle shown in the Figure. In the process the gas does 3.00 × 105 J of work. Find the gas temperature at point A.

A

PA

3x105

P (Pa)

V (m3)

1

3

$$n=30 mol$$

$$W=3×10^{5}J$$

$$W=the area under the P vs V graph$$

$$ =\left(3-1\right)×\left(3×10^{5}-P\_{A}\right)=3×10^{5} J$$

$$2P\_{A}=6×10^{5}-3×10^{5} ⇒ P\_{A}= 1.5×10^{5} Pa$$

$But P\_{A}V\_{A}=nRT\_{A} the equation of ideal gas law at point A $

$$ T\_{A}=\frac{P\_{A}V\_{A}}{nR}=\frac{1.5×10^{5}×1}{30×8.31}=601.7 K $$