Answer on Question #66801, Physics / Molecular Physics | Thermodynamics

Derive an expression for the work done by a gaseous system for an isothermal expansion of an ideal gas.

Solution:

The work done by a gaseous system for an isothermal expansion of an ideal gas:

$$W = \int_0^W dW = \int_{V_1}^{V_2} P dV = \int_{V_1}^{V_2} \frac{m}{M} \frac{RT}{V} dV = \frac{m}{M} RT \ln \frac{V_2}{V_1},$$

where P is the press of gas, m is the mass of gas, M is the molar mass of gas, R is the gas constant, T is the absolute temperature of the gas, V_1 is the initial volume of gas, V_2 is the last volume of gas.

Answer provided by https://www.AssignmentExpert.com