$dU = dQ - pdV$

Przemiany termodynamiczne gazu idealnego

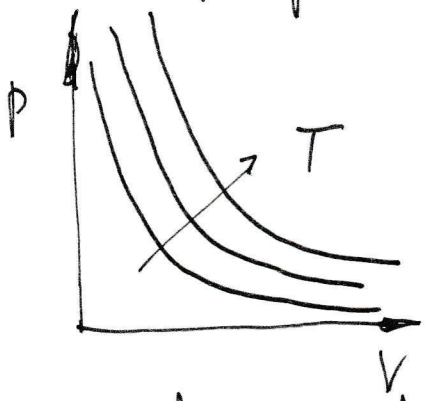
$pV = nRT$

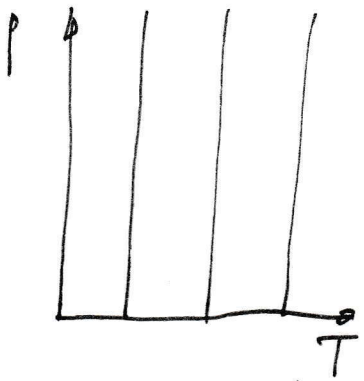
$pV = \frac{m}{\mu} RT$

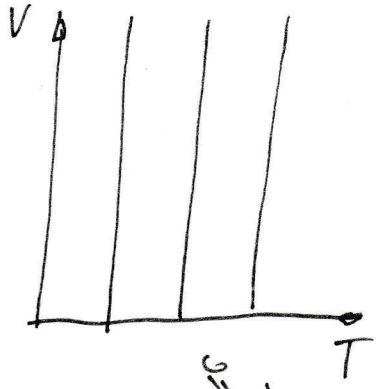
$T = const$ izotermiczna

$dU = 0 \Rightarrow dQ = pdV = dW$

$$\int dW = \int_{V_1}^{V_2} p\,dV = \int_{V_1}^{V_2} \frac{nRT}{V}\,dV = nRT \ln \frac{V_2}{V_1}$$



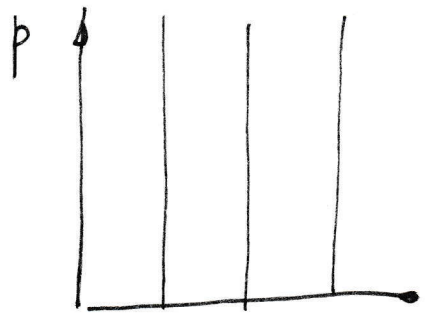


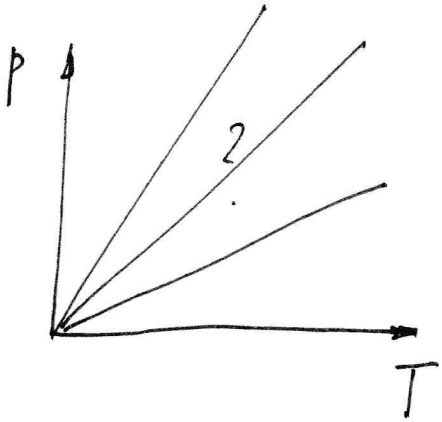


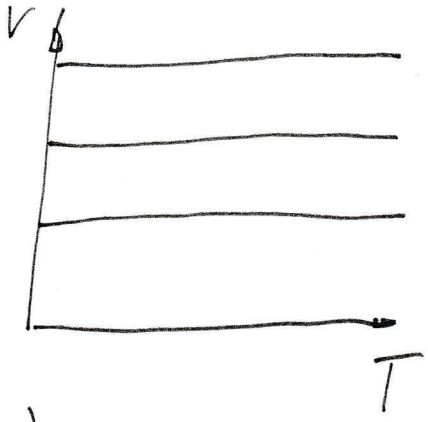
$V = const$ izochoryczna

$dU = c_v dT$ $\quad dW = dU$

$$c_v = \left(\frac{dQ}{dT}\right)_V = \left(\frac{dU + pdV}{dT}\right)_V = \frac{dU}{dT}$$







$p = const$ izobaryczna

$$c_p = \left(\frac{dQ}{dT}\right)_p \Rightarrow dQ = c_p dT$$

$dW = pdV$