

42.)

$$V_1 = 10 \text{ dm}^3$$

$$P_1 = 0,1 \text{ MPa}$$

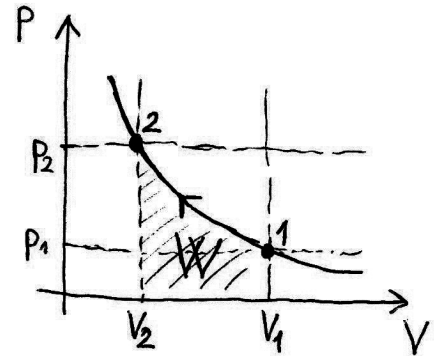
$$T = \text{all}$$

$$Q_{le} = 3,14 \text{ kJ} \quad P_2 = ?$$

$\Delta E_b = Q + W$	$\delta W = -p dV$
$Q_{le} = -Q$	$pV = nRT$

Ha  $\Delta T = 0$  és  $n = \text{all} \rightarrow \Delta E_b = 0$

$$0 = Q + W \rightarrow W = 3,14 \text{ kJ}$$



$$\delta W = -p dV$$

$$\delta W = -\frac{P_1 V_1}{V} dV$$

$$pV = nRT \rightarrow P_1 V_1 = P_2 V_2$$

$$p = \frac{nRT}{V} = \frac{P_1 V_1}{V}$$

$$W = -\int_{V_1}^{V_2} \frac{P_1 V_1}{V} dV = -P_1 V_1 \int_{V_1}^{V_2} \frac{dV}{V} = -P_1 V_1 [\ln V]_{V_1}^{V_2} = -P_1 V_1 (\ln V_2 - \ln V_1) =$$

$$= P_1 V_1 (\ln V_1 - \ln V_2) = P_1 V_1 \ln \frac{V_1}{V_2}$$

$$\underline{\text{de}} \quad P_1 V_1 = P_2 V_2 \rightarrow \frac{V_1}{V_2} = \frac{P_2}{P_1}$$

Tehát:  $W = P_1 V_1 \ln \frac{P_2}{P_1}$

$$\ln \frac{P_2}{P_1} = \frac{W}{P_1 V_1}$$

$$\frac{P_2}{P_1} = e^{\frac{W}{P_1 V_1}}$$

$$P_2 = P_1 \cdot e^{\frac{W}{P_1 V_1}} = \dots = \underline{\underline{2,31 \text{ MPa}}}$$