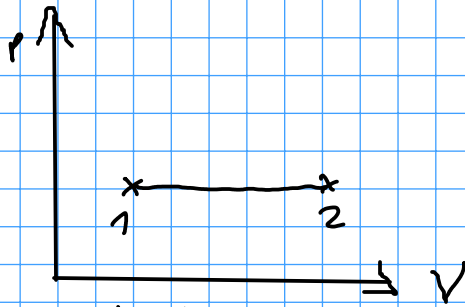


Aufgabe 13

geg. m , p_1 , T_1 (in K)

isobar, Q_{12}



$$pV = m R_i T$$

$$\Rightarrow V_1 = \frac{m R_i T_1}{p_1} \quad R_i := \frac{R}{M}$$

ges: $p_1, V_1, T_1 / p_2, V_2, T_2$, w_{12} , $u_2 - u_1$, $h_2 - h_1$

V_1 ✓

$$p_2 = p_1 = \dots$$

$$Q_{12} = m \overline{c_p} \Big|_{T_1}^{T_2} (T_2 - T_1)$$

$$\text{Skizze: } T_2 = 2200^\circ\text{C} \Rightarrow T_2 = T_1 + \frac{Q_{12}}{m \overline{c_p} \Big|_{T_1}^{T_2}} = 2235^\circ\text{C} \quad \text{ok}$$

$$\frac{V_1}{T_1} = \frac{V_2}{T_2} \Rightarrow V_2 = \left(\frac{T_2}{T_1}\right) V_1 = \dots$$

\Rightarrow in K!

$$c_p - c_v = R_i$$

$$w_{12} = p_1 (V_2 - V_1) = \dots$$

$$u_2 - u_1 = m \overline{c_v} \Big|_{T_1}^{T_2} (T_2 - T_1) \quad \checkmark$$

$$h_2 - h_1 = m \overline{c_p} \Big|_{T_1}^{T_2} (T_2 - T_1) = Q_{12}$$