1a) Isothermer Prozess

$$p_1 V_1 = p_0 V_0$$

$$p_1 A h_1 = p_0 A h_0 \quad \Rightarrow h_1 = \frac{p_0 h_0}{p_1}$$

$$h_1 = \frac{p_0 h_0}{p_0 + \rho_{Hg} \cdot g \cdot l} = \frac{980\ \text{hPa} \cdot 50\text{cm}}{980\ \text{hPa} + 13{,}55\ \text{g/cm}^3 \cdot 9{,}81\ \text{m/s} \cdot 0{,}1\ \text{m}}$$

$$= \underline{44\ \text{cm}}$$

b) isobar $\quad \frac{V_2}{T_2} = \frac{V_1}{T_1} \quad \Rightarrow \frac{A h_2}{T_2} = \frac{A h_1}{T_1}$

$$\Rightarrow h_2 = \frac{373}{295} \cdot 44\text{cm} = \underline{56\ \text{cm}}$$

c) $\left(p_2 + \frac{am^2}{V_2^2}\right)(V_2 - bm) \cdot \frac{1}{T_2} = \left(p_1 + \frac{am^2}{V_1^2}\right)(V_1 - bm) \cdot \frac{1}{T_1}$

$$\left(V_2^2 p_2 + am^2\right)\left(V_2 - bm\right)\frac{1}{T_2} = \left(V_2^2 p_1 + am^2 \frac{V_2^2}{V_1^2}\right)\left(V_1 - bm\right)\frac{1}{T_1}$$

$$V_2^3 p_2 - V_2^2 p_2 bm + am^2 V_2 - abm^3 =$$

$$T_2/T_1 \left[V_2^2 p_1 \cdot V_1 - V_2^2 p_1 bm + am^2 \frac{V_2^2}{V_1} - abm^3 \frac{V_2^2}{V_1^2} \right]$$

$$V_2^3 p_2 + V_2^2 \left(-p_2 bm - \frac{T_2}{T_1} p_1 V_1 + \frac{T_2}{T_1} p_1 bm - \frac{T_2}{T_1} am^2 \frac{1}{V_1} + \frac{T_2}{T_1} abm^3 \frac{1}{V_1^2}\right)$$

$$+ V_2 \cdot am^2 - abm^3 = 0$$

→ Ausrechnen sehr Länglich!