由恰当微分的性质可导出 Maxwell 关系式

(按括号对齐)

$$\left.\begin{aligned} \mathrm{d}U &= T\,\mathrm{d}S - p\,\mathrm{d}V \\ \mathrm{d}H &= T\,\mathrm{d}S + V\,\mathrm{d}p \\ \mathrm{d}A &= -S\,\mathrm{d}T - p\,\mathrm{d}V \\ \mathrm{d}G &= -S\,\mathrm{d}T + V\,\mathrm{d}p \end{aligned}\right\} \Rightarrow \left\{\begin{aligned} \left(\frac{\partial T}{\partial V}\right)_S &= -\left(\frac{\partial p}{\partial S}\right)_V \\ \left(\frac{\partial T}{\partial p}\right)_S &= \left(\frac{\partial V}{\partial S}\right)_p \\ \left(\frac{\partial S}{\partial V}\right)_T &= \left(\frac{\partial p}{\partial T}\right)_V \\ \left(\frac{\partial S}{\partial p}\right)_T &= -\left(\frac{\partial V}{\partial T}\right)_p \end{aligned}\right. \tag{1}$$

（按等号对齐）

$$\left.\begin{aligned} \mathrm{d}U &= T\,\mathrm{d}S - p\,\mathrm{d}V \\ \mathrm{d}H &= T\,\mathrm{d}S + V\,\mathrm{d}p \\ \mathrm{d}A &= -S\,\mathrm{d}T - p\,\mathrm{d}V \\ \mathrm{d}G &= -S\,\mathrm{d}T + V\,\mathrm{d}p \end{aligned}\right\} \Rightarrow \left\{\begin{aligned} \left(\frac{\partial T}{\partial V}\right)_S &= -\left(\frac{\partial p}{\partial S}\right)_V \\ \left(\frac{\partial T}{\partial p}\right)_S &= \left(\frac{\partial V}{\partial S}\right)_p \\ \left(\frac{\partial S}{\partial V}\right)_T &= \left(\frac{\partial p}{\partial T}\right)_V \\ \left(\frac{\partial S}{\partial p}\right)_T &= -\left(\frac{\partial V}{\partial T}\right)_p \end{aligned}\right. \tag{2}$$

一个高次方程的解集

$$\Omega = \left\{ x \;\middle|\; \begin{multlined} x^7 + x^6 + x^5 \\ + x^4 + x^3 + x^2 \\ + x + 1 = 0 \end{multlined} \right\} \tag{3}$$