

$$\left(P+\frac{a}{V^2}\right)(V-b)=RT$$

$$PV=A+\frac{B}{V}+\frac{C}{V^2}+...$$

$$W=\int Fdx=\int P\underbrace{Adx}_{dV}=\int PdV$$

$$C_V=\left(\frac{dQ}{dT}\right)_V$$

$$C_P=\left(\frac{dQ}{dT}\right)_P$$

$$\eta=\frac{W}{Q_1}=1-\frac{Q_2}{Q_1}=1-\frac{T_2}{T_1}$$