Thermodynamics

1 Thermodynamics Systems

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June 29, 2022

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$$f(p, V, t) = 0 \tag{1}$$

$$dL = pSdh \tag{2}$$

$$dL = pdV \tag{3}$$

$$L = \int_A^B pdV \tag{4}$$

$$L = \int_{V_A}^{V_B} pdV \tag{5}$$

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$$pV = \frac{m}{M}RT \tag{6}$$

$$pV = RT \tag{7}$$

$$\rho = \frac{m}{V} = \frac{Mp}{RT} \tag{8}$$

$$pV = \text{constant}.$$

$$\begin{aligned} L = \int_{V_1}^{V_2} p dV &= \frac{m}{M} RT \int_{V_1}^{V_2} \frac{dV}{V} \\ &= \frac{m}{M} RT \ln \frac{V_2}{V_1} \\ &= \frac{m}{M} RT \ln \frac{p_1}{p_2} \end{aligned} \tag{9}$$

$$L = RT \ln \frac{V_2}{V_1} = RT \ln \frac{p_1}{p_2} \tag{10}$$

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