
Posted by

on Thu, 14 Aug 2008 21:14:01 GMT

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B.

EB-EA = Q-L , (7)

$L = Q, (10)$

$$dE = \left(\frac{\partial E}{\partial T} \right)_V dT + \left(\frac{\partial E}{\partial V} \right)_T dV .$$

$$\delta Q = \left(\frac{\partial E}{\partial T} \right)_V dT + \left[\left(\frac{\partial E}{\partial V} \right)_{T+P} \right] dV \quad (13)$$

$$dV = \left(\frac{\partial V}{\partial T} \right)_P dT + \left(\frac{\partial V}{\partial P} \right)_T dP$$

$$\delta Q = \left[\left(\frac{\partial E}{\partial T} \right)_P + P \left(\frac{\partial V}{\partial T} \right)_P \right] dT + \left[\left(\frac{\partial E}{\partial P} \right)_T + P \left(\frac{\partial V}{\partial P} \right)_T \right] dP . \quad (14)$$

$$c_V = \frac{\left(\delta Q \right)_V}{dT} = \left(\frac{\partial E}{\partial T} \right)_V \quad (15)$$

$$c_P = \frac{\left(\delta Q \right)_P}{dT} = \left(\frac{\partial E}{\partial T} \right)_P + P \left(\frac{\partial V}{\partial T} \right)_P \quad (16)$$

$$C_V = \left(\frac{\partial \widetilde{E}}{\partial T} \right)_V, \quad C_P = \left(\frac{\partial \widetilde{E}}{\partial T} \right)_P + P \left(\frac{\partial \widetilde{V}}{\partial T} \right)_P, \quad (17)$$

$$C_V = \left(\frac{\partial \tilde{E}}{\partial T} \right)_V = \frac{d\tilde{E}}{dT} \quad (18)$$

$$\tilde{E} = C_V T + E_0, \quad (19)$$

$$E = N(C_V T + E_0) \quad (20)$$

$$\delta \tilde{Q} = C_V dT + P d\tilde{V} \quad (21)$$

$$P\tilde{V} = RT, \quad (22)$$

$$P d\tilde{V} + \tilde{V} dP = R dT$$

$$\delta \tilde{Q} = C_V dT + R dT - \tilde{V} dP$$

$$C_P = \left(\frac{\delta \tilde{Q}}{dT} \right)_P = C_V + R, \quad (23)$$

$$\Delta Q_1 = L = \int_{V_A}^{V_B} P \, dV = \int_{V_A}^{V_B} NRT_1 \frac{dV}{V}, \quad (27)$$

$$\Delta Q_1 = NRT_1 \ln \frac{V_B}{V_A}. \quad (28)$$

$$\Delta Q_2 = \int_{V_C}^{V_D} P \, dV = NRT_2 \ln \frac{V_D}{V_C}. \quad (29)$$

$$\eta = \frac{L}{\Delta Q_1} = \frac{\Delta Q_1 + \Delta Q_2}{\Delta Q_1} = 1 + \frac{\Delta Q_2}{\Delta Q_1}. \quad (32)$$

$$\eta = 1 - \frac{T_2}{T_1} \quad (33)$$

$$\sum_{i=1}^n \frac{\Delta Q_i}{T_i} = 0, \quad (34)$$

$$\oint \frac{\delta Q}{T} = 0. \quad (35)$$

$\oint \frac{\delta Q}{T}$
